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The BULLETIN of the AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

Volume 18, Number 1

March 1958

AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

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Published Quarterly by the Association
Fred Wertheimer, Publisher
Michigan Department of Health, Lansing 4, Michigan

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CONTENTS

	Page
The President's Page - Roy D. Smiley	1
Intra-Staff Communications - John W. Stone	2
The Role of Fluoride In Tooth Enamel - George L. Clark	6
The Legality of the Fluoridation Procedure - Bernard J. Conway	9
The Medical Aspects of Fluoridation - Henry F. Helmholz	19
Engineering Aspets of Communal Fluoridation - Harry E. Jordan	30
Water Fluoridation - An Effective Health Measure - Donald J. Galagan	35
Editorials	43
Semi-Annual Meeting Minutes	45
Committee Reports	48

NOTES and NEWS

Flash - Dr. Edward Taylor Dies	50
Dental Public Health Highlights	50
Urban Sprawl Study	51
David F. Striffler Reports	53
Ski-ing Sebelius Suffers Sprain	54
Correspondence	55
Dallas Arrangements	60
Nice Report	60
Careers in Dentistry	60
From ADA News Letter	60

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Subscription price, $2.00 per year; single copies, when available, 50¢.

THE PRESIDENT'S PAGE

Someone has made the statement that "Nothing is so constant as change," and every convention trip I make provides me with experiences which strengthen my belief in the truth of that phrase. These experiences have taught me that change and progress in other callings and professions follow closely, and are quite similar to, the pattern of Dental Public Health as set out so well by Past President Hagan in his address to us in Miami last November. (Read it again in the November 1957 Bulletin).

In this address is a review of the basic plan which was blueprinted 21 years ago. Several revisions in parts of the plan were cited, many parts have been emphasized, some have been almost deleted and others expanded to meet prevailing needs.

As an example of emphasizing the necessity to meet prevailing needs is the announcement in January American Dental Association Highlights that, at the 9th National Dental Health Conference at ADA Headquarters April 28-30, particular attention will be given to the subject of the dental division's program in a state health department. Dr. Jay H. Eshleman, Chairman of the Council on Dental Health of the ADA, said that a questionnaire to serve as a guide for establishing the program content had been developed by the Council in cooperation with the AAPHD and would be presented for discussion. The results of a survey based on the questionnaire would provide information that would enable state dental societies and dental divisions to document their requests for funds for the program.

That alterations of a program plan are not confined to dental public health alone was brought to my attention on several occasions while attending the Chicago Dental Meeting February 2-4. On the train to Chicago, my seat mate, a dental salesman, had his idea as to how to deal with infections due to non-sterile hypodermic needles. (Maybe he sells autoclaves). A Judge in the Federal Court of Appeals, whom I met, has a definite blueprint outlining procedures to keep his docket current. A Dental School Alumni Association was certainly altering its blueprint for assistance to the athletic program and an Assistant Athletic Director's program sounded, except for words and phrases, much like a dental health program.

Last minute developments in Dick Leonard's plans found him in Chicago Sunday after a letter to me in longhand stating that he would <u>not</u> be in Chicago. He secured a room without having a reservation for that night but had to vacate early Monday morning. His plane flight home was a late evening one so I had him share my room until departure. To appreciate fully how much I enjoyed the visit with him would require all of you to be native Hoosiers. His program plans and goals may deviate from his blueprint, but <u>the real Dick Leonard</u> just doesn't change.

At our meeting February 2, it was good to have Allen Gruebbel make a fine plea for better dental public health courses and Norm Gerrie suggest that possibly a clearing house of dental health materials and program plans could be established.

It is a certainty that all members of our organization are affected to some degree by the events of our changing attitudes toward plans for better dental public health. Your Executive Council and Officers know many ideas are held by you that can improve the blueprint of our plan. Will you help us keep abreast with progress in our field by sending your ideas to us or, better yet, send them directly to the Chairman of the proper committee for preparation for consideration at our annual meeting in Dallas?

INTRA-STAFF COMMUNICATIONS*

John W. Stone, D.D.S., M.P.H.**

In second grade arithmetic we learned that it is impossible to add oranges to apples. The botanical and mathematical laws governing this fundamental relationship have not changed since the third day of The Creation. The individuals composing the staff of a public health organization may be likened to oranges and apples. Some may even be peaches, and occasionally there is a prune or a raspberry. The various professional backgrounds and training experiences of these persons may complicate seriously all efforts to communicate within the organization. Effective communications, however, govern the effectiveness of the activities of the public health team. Until the individual oranges and apples, and all the others are joined together in the compote of "team-manship," they retain the exclusiveness that we learned about in the second grade. A compote, by definition, is "various fruits stewed together in sirup".. It is not considered essential for the staff to get "stewed together" in order that effective communications may be established, nor should it be interpreted that sirupy words will replace mutual understanding and sincere appreciation. However, the flavor of an otherwise bland public health compote is enhanced markedly by the spice of effective intra-staff communication.

While presuming that the term "intra-staff" is sufficiently well understood that an etymological consideration is unnecessary, no similar assumption will be made in regard to the word "communication." For despite the possibility

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* Presented at the Joint Session of the Sections of Dental Health, Food and Nutrition, Health Officers, Public Health Education, and Public Health Nursing, Annual Meeting of the American Public Health Association, November 11-15, 1957.

**Director of Division of Dental Health, Texas State Department of Health.

that the many connotations and implications of the word are well recognized, it does seem appropriate that the facet of meaning which pertains to messages and their theory be reviewed in order to furnish a backdrop for the remainder of this presentation.

Communication has been defined as the interchange of thoughts or opinions. Interchange implies that two or more persons are involved in the process. The intrinsic nature of thought requires that it be modified in some manner in order that it may be transmitted from the mind of the sender to the mind of the receiver. And thus, two additional factors are introduced; the necessity for a method for encoding and decoding the thought in order that, if not identical, at least similar mental images result, and a media through which the encoded message may be transmitted. Language and the various art forms are the usual mechanisms employed for coding the various thought units for transmission. And any organized method for the stimulation of a combination, of the five senses may be utilized as an avenue for transmission. The most usual and the most effective mode of communication is a combination of vocal-aural and visual. The existence of specialized jargon within the various disciplines in public health frequently complicates communication to such an extent that decoding the messages is either impossible, or worse, their meanings become garbled.

The nature of messages may run the gamut from the young swain's impassioned declaration, "I love you," to the drill sergeant's order, "Attention." The message may be merely informational, or it may require a positive response. When the sweetheart of the swain trembles ecstatically and the troop snaps smartly to attention, the communicator has been successful.

The philosophy of teamwork requires the sublimation of individual ambitions and desires to those of the group. Communication, therefore, must be a two-way process. Ideas must move in all directions, not in the helter-skelter manner of the Mad Hatter, but along established channels within the organization. Messages must move downward and laterally, as well as upward. It is important that the entire staff be informed, be drawn on, be asked to contribute their judgments, and be given the opportunity to participate. All divisions should be informed at the same time about any matter which concerns the entire organization. Nothing can more quickly destroy or impair a director's sense of leadership than to find that his subordinates are better informed on departmental matters than he is.

Each message originates within an individual, and, at some moment in time, is thrown into the organizational stream of communication. Its ultimate effect is determined by the appropriateness of the time selected for its projection. Equally important, however, is the accuracy of the thinking from which it sprang. If the individual cannot think clearly, he cannot communicate effectively. The basis for better communication is to state first of all what is to be done and by whom, and then tell why, where, when and how.

Intra-staff communication has entered the age of the memorandum. As the activities of the public health organization become more varied, the problems of intra-staff communication become more complex. The increased scope of services and activities usually necessitates, and results in, the expansion of

the staff to include many additional new personnel. In the instance of a growing and dynamic organization, there has been such a tremendous influx of new faces that it is no longer possible to rely upon or employ spoken communication except in specialized instances.

More and more decisions are being made on the basis of the memorandum, which is a written presentation or report. This is an inescapable part of growth. Continued growth and expansion of public health activity is likely to make the written word even more essential as a time-saving and useful instrument for communicating within the organization. Therefore, at the time of writing it is important to pause and consider the impact of the memorandum upon the staff in order that the possibility of misunderstanding or misconception will be minimized or prevented. This kind of writing is not easy, even with practice. But there are ways of making it easier for both the writer and the reader. The steps include:

Put the idea into one sentence.
Organize your thoughts.
Keep it simple.
Make it easy for the reader.
Cut and condense.
Seek constructive criticism warily.
Get eye appeal.

In written communication, grammar, correct punctuation and spelling are essential; but they are not the causes of unreadable writing. Some of the causes are trite and pretentious words, long tangled-up sentences, and useless repetitions. No member of the staff should become disturbed because he cannot sit down and dictate a clear, complete memorandum at one sitting. Experienced writers go over their copy repeatedly. The simpler it reads the more time it takes.

Thus far, this presentation has been concerned primarily with the point of origin of the message and the various forms the message may take and the various media along which the message may be transmitted. Nothing particular has been said about the receiver, who, to complete the chain of events called communications, must demonstrate simultaneously several attitudes. First of all, he must desire to be communicated with. He must have an empathic understanding for the originator of the message. It may require honest effort on the part of the receiver to decipher the message being directed to him.

A communication, then, requires a communicator or sender who has something to communicate. He will utilize a language which will make possible the transmission of the message to the receiver. The form of the message must be one which the receiver is capable of sensing and interpreting. Clear thinking and team consciousness, on the part of the communicator as well as the receiver, are major factors in the determination of the total effectiveness of this activity known as "intra-staff communications."

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THE ROLE OF FLUORIDE IN TOOTH ENAMEL*

George L. Clark, Ph.D.**

For the past several years the effect of fluorides in drinking water on the resistance of teeth to decay has been a subject of foremost interest to scientists, the public at large, and especially parents of growing children. Convincing statistical data demonstrate that in all cases there is 50 to 60 per cent smaller incidence of dental cavities in communities with fluoridated water than in other communities. The American Dental Association, the American Medical Association, and other scientific groups have almost unanimously approved fluoridation. Yet whenever citizens have been called upon to vote on the issue, there has been intense and bitter opposition. These highly emotional appeals based on religious convictions, on some imagined loss of freedom of choice, or on alleged poisonous effects of fluorides have defeated efforts to provide controlled fluoridation in perhaps half of all cities in which voting on the issue has occurred.

It is surprising that in the debate over fluoridation one of the truly scientific aspects of the subject has not been clearly described. Exactly what does fluoride in controlled trace amounts in drinking water do to teeth? Chemistry now has the modern instrumentation by means of which this question may be answered with positive accuracy. Improved optical microscopic techniques, the electron microscope with which images may be magnified 100,000 times or more, and x-ray and electron diffraction analysis of the solid crystalline structure of tooth enamel, dentine, and bone, leave no doubt concerning the effect of controlled fluoridation of drinking water. Research work with these precision instruments has been successfully conducted and still continues with intensified effort in many laboratories, but especially at the National Bureau of Standards, the National Institutes of Health, the New York University College of Dentistry, and the Chemistry Department of the University of Illinois. The results are concordant and highly conclusive. Only the briefest summary of some of the most direct and important findings are possible here.

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*Presented before the Champaign County, Illinois, Torch Club. Published in "The Torch" (January 1958), the official periodical of the International Association of Torch Clubs. Reprinted with the kind permission of the author and the editor of "The Torch."

**G. L. Clark has been research professor of analytical chemistry at the University of Illinois since 1953, having headed the division of analytical chemistry for twenty-six years. He is a graduate of DePauw University (A. B., 1914; honorary D.Sc., 1937) and of the University of Chicago (Ph.D., 1918). A member of several honorary societies including Phi Beta Kappa and Sigma Xi, he has received the Marburg Lecture Award of the American Society for Testing Materials, the Grasselli Medal of the Society of Chemical Industry, and the Mehl Medal of the Congress of Metals. He has served the American Chemical Society as chairman of the Division of Physical and Inorganic Chemistry (1928) and as chairman of the Division of Cellulose Chemistry (1939). Dr. Clark was editor-in-chief of the Chemical Encyclopedia (Reinhold, 1957) and senior author of Quantitative Analysis, 1952.

The careful measurements and identifications of minerologists have contributed the essential background for the analysis of the effect of fluoride upon tooth enamel, which is 96 per cent inorganic mineral. This crystalline protective layer on teeth is identical with the well known calcium phosphate mineral, hydroxyapatite, which chemists describe by the formula $Ca_{10}(PO_4)_6(OH)_2$, where Ca is calcium, PO_4 is phosphate and OH is the basic hydroxyl group (which, combined with hydrogen, yields water, H^2O). This fact has been proved repeatedly by x-ray diffraction patterns, which are characteristic "finger-prints" of the unique composition and structure of each crystalline solid. Thus the human body is able to build the minerals dissolved in water and existing in foods into this phosphate in teeth and bones from the earliest embryonic stage of development. Laboratory analysis of teeth and bones developed in living processes has proved that the basic hydroxyl groups in this compound which readily react with acids may be replaced statistically and at random in the crystal lattice by fluoride ions without in any way affecting the structure of the apatite; hydroxyapatite now becomes fluorapatite. The fluoride ions are just a little smaller than the hydroxyl groups which they replace, so that the crystal lattice is tightened slightly, as shown by a slight shift in the lines on the crystal pattern. A measurable increase in hardness and a decrease in solubility of the mineral and the tooth enamel may actually be detected when one out of each 300 hydroxyl groups is replaced with fluoride.

This amount of fluoride in enamel, corresponding to only 0.013 per cent by chemical analysis, is the equilibrium concentration resulting from the presence of 1 part per million of fluoride in drinking water. In the physiological processes of the human body, this trace amount of fluoride is transferred from water to the blood plasma and in turn is built into the teeth of infants before eruption. When hydroxyapatite mineral or tooth enamel is placed in a solution of a fluoride, the exchange of fluoride for hydroxyl by diffusion is exceedingly slow except at elevated temperatures. It is clear, then, that the most beneficial effect of fluoride is brought about by introduction during the early stages of tooth formation and deposition of the mineral matter on a network of very fine organic fibrils during the development of the embryo. This is proved by study of the teeth of infants and children before and after tooth eruption.

Fluoride plays an exceedingly important role in addition to its substitution in hydroxyapatities. On the average, tooth enamel contains 3.98 per cent carbonate that is not uniformly distributed in the apatite but segregated in localized areas. The reaction of acids on carbonates to produce carbon dioxide gas is well known. This seems to be the cause of "soft spots," which readily react with acids in the foods and in the mouth to form the beginnings of the lesions which result in dental caries. Fluoride in even these very small amounts completely eliminates these carbonate areas, so that there is no chance for acid reaction. It is not surprising, then, that in all communities with controlled fluoridation of water supplies there is on the average a 60 per cent decrease in the incidence of dental caries, especially in children.

There are a number of other effects of fluoride on dental enamel, as well as those on dentine, which is 70 per cent apatite mineral, and those on cementum on roots of teeth, which is 50 per cent apatite. For example,

hydroxyapatite is converted at a relatively low temperature to another calcium phosphate mineral compound, whitlockite, with an entirely different structure. Such a change, if allowed to occur, could be a highly disruptive process in teeth and bones. In the presence of traces of fluoride in the apatite, this transformation temperature is raised to above 600°; thus fluoride has a remarkable stabilizing and preserving effect.

Electron microscopy, one of the great new tools of science, shows at high magnifications the structure of tooth enamel with remarkable clarity. In new erupted teeth (baby and second teeth) the solid, crystalline matter of enamel possesses a marvelously regular and organized structure of extremely minute hexagonal prisms fitting together like mosaic tiles. There is also a series of parallel bands on the surfaces called perikymata, which resemble the overlapping shingles on a roof.

In normal cases without fluoride these structures disappear rapidly as the developing child masticates more or less abrasive foods and uses dentifrices with polishing and abrasive action. Microscopic examination shows only an indefinite structure, sometimes with prominent scratches. But with fluoride the evidence of hexagonal prisms and perikymata persists for many years, indicating greater stability, hardness, and resistance to solution or abrasion.

In areas where the natural water supply contains 5 or more parts of fluoride per million, the familiar mottling of teeth occurs. This seems to be due to the formation in some areas of calcium fluoride imbedded in the apatite mineral. These teeth suffer only in appearance, for they are very hard and resistant to decay.

Calcium fluoride in layers only a few molecules deep is also formed on enamel surfaces by the use of tooth pastes containing tin fluoride (fluorostan), which reacts with calcium in the hydroxyapatite, and of course covers up the highly reactive carbonate spots. These layers, easily reformed, have a protective effect because calcium fluoride is the well known inert insoluble mineral fluoride. It is interesting to note that sharks have teeth with fifty to a hundred times as much fluoride without deterioration of tooth structure; the fluorides give strength and hardness to teeth with sharp needle points.

The exact mechanism of fluoridation effects on teeth has thus been scientifically demonstrated. Fluoride widely distributed in the essential phosphate mineral of teeth, not as a separate concentrated phase, precludes the possibility of any poisonous effects which may be associated with large doses of sodium fluoride or similar compounds. Once present in enamel in these trace amounts, the fluoride remains permanently as an effective barrier to tooth decay.

Infrared Spectrometry Shows How

In a paper just published, Professor Robert B. Fischer of Indiana University describes his great success in applying infrared spectrometry to the proof of the mechanism of fluoridation on tooth enamel. This technique now is probably the most rapid and dependable method for determining the actual percentage of fluorine in the crystal lattice as a function of the concentration of fluoride in water supplies.

Research in crystal chemistry, then, with the aid of such instruments as optical and electron microscopes, x-ray and electron diffraction, emission spectrographic analysis and infrared absorption spectrophotometry, has given an unequivocal answer as to why and how very small amounts of fluoride in drinking water seem always to be associated with greatly decreased tooth decay. With understanding of the unprejudiced efforts of research scientists to ascertain the truth and acceptance of the facts instead of rumors and propaganda, another milepost on the road to ever improving national health will be passed.

THE LEGALITY OF THE FLUORIDATION PROCEDURE*

Bernard J. Conway, LL.B**

Political scientists and lawyers will be reviewing the court decisions on fluoridation long after public acceptance of the fluoridation procedure has put to rest the claims now being made by its opponents. Those who have contributed their efforts, and perhaps considerable financial resources, toward the disposition of fluoridation litigation may not fully appreciate their gracious offering to political science and legal learning. At this moment in fluoridation's short history no one can criticize a failure to recognize that the significance of the fluoridation cases goes beyond securing better health for the nation's citizens. This public health goal should be and is uppermost in the zealous efforts of those who have undertaken responsibility for defending the fluoridation procedure in the courts.

I shall, then, contribute what I can to an understanding of the legal principles which apply to the right of a municipality or other subdivision of a state to initiate fluoridation. I have no goal other than to present a sketch of fluoridation's contributions to political science and legal learning.

The Authority of a Municipality: The city, the town, the village are creatures of the state in which they are located. Their governmental powers may be broad or limited. One must look to the municipality's charter from the state and other state laws to determine its powers. Under our federal system each state has retained to itself the full measure of police power. The federal government, at least theoretically, has no police power.

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*Presented at the Conference on Fluoridation sponsored by the Indiana State Dental Association and the Indiana State Board of Health, Indianapolis, Indiana, October 2, 1957.

**Secretary of the ADA Council on Legislation.

Necessarily a municipality must share in the exercise of the state's police power. The extent of police authority in a municipality, however, is limited to that delegated by the state legislature. In most instances, though, municipalities in this country have a broad grant of police power to act in protecting the public health and welfare.

Here is one of the many appropriate definitions of governmental police power.

The police power is an inherent power of a sovereign state. The police power encompasses governmental actions to protect or promote the safety, health or welfare of the public. The police power of the several states within the United States federal system is properly exercised where the governmental action is reasonably related to the goal of police power, that is the protection or promotion of public safety, health or welfare, and will not unreasonably interfere with the exercise of fundamental liberties secured by the federal and state constitutions.

The cases on fluoridation illustrate that the courts have had little difficulty in determining that the municipality involved in the law suit had the power to act to protect the public health and welfare. That this is a fundamental fact to be established, however, is shown eloquently in the recent Canadian decision in which the Court concluded that the City of Toronto had not received from the Provincial Government of Ontario the authority to initiate fluoridation.[1] In each of the cases litigated in the United States, however, the court has been able to find the necessary public health police power in the municipality under either specific or general provisions in the municipality's charter or in other state laws. In the remaining discussion I shall assume that the delegation of police power to the municipality is sufficient to enable the city, town or village to take action to protect public health and welfare.

The Valid Exercise of Police Power: The police power does, of course, have limitations. Looking only at the exercise of police power by political subdivisions of a state to further public health and welfare, one can find hundreds of court cases defining those limitations. The fluoridation cases, in my opinion, have exhaustively treated the three major limitations of police power. These are (1) a political subdivision of a state may not use the police power to justify an action not reasonably related to one of the recognized goals of the police power, (2) a political subdivision of a state may not exercise its police power, even though otherwise justified, where that exercise of power will result in a clearly unreasonable invasion of personal rights secured by the federal or state constitutions and, (3) a political subdivision of a state may not exercise its police power, even though otherwise justified, where that exercise of power will be clearly in conflict with an overriding federal or state statute.

1/ Village of Forest Hill v. The Municipality of Metropolitan Toronto, Supreme Court of Ontario, Court of Appeal, (1956) O. R. 367.

The "reasonable relation to goal" test is best illustrated by the case of Chapman v. Shreveport (La.).[2] The lower court held that the police power to protect public health granted by the state to Shreveport could not be used to justify initiating fluoridation because that procedure, in the court's opinion, was not reasonably related to protection of public health. To reach this conclusion the court distinguished public health responsibilities of the government from personal health responsibilities of its citizens. The lower court concluded that since dental caries is not a contagious or a communicable disease the methods for combating dental caries are "within the realm of individual and personal dental health and hygiene within which each person should be free to choose his course for himself and those for whom he is responsible in the family relation."

The Supreme Court of Louisiana, however, decided differently. On appeal the upper court held that fluoridation is reasonably related to the protection of public health. In the view of the Louisiana Supreme Court the public health responsibilities of Shreveport are not limited to methods for combating contagious and communicable diseases. The Court stated: "Children of today are adult citizens of tomorrow upon whose shoulders will fall the responsibilities and duties of maintaining our government and society. Any legislation, therefore, which will better equip them by retarding or reducing the prevalence of disease is of great importance and beneficial to all citizens." This part of the Louisiana Supreme Court's decision, therefore, establishes as a principle that the first limitation of police power is not applicable to the fluoridation procedure. The Court decided that fluoridation of a community water supply is reasonably related to protection of public health because it is intended to reduce the prevalence of disease among a substantial segment of the community even though that disease is non-contagious and non-communicable.

The test of whether an otherwise valid exercise of police power unreasonably interferes with fundamental personal rights has been by far the most important issue in the fluoridation cases. What are the personal rights alleged to be violated by fluoridating public water supplies?

These rights can be described as follows:

1. The right of each individual to be free to treat his health as he deems best.

2. The right of parents to be free to rear and care for their children as they deem best.

3. The right to be free from medical experimentation on one's person.

4. The right to be free of interference with religious beliefs.

2/ 74 So.2d 142, reversing lower court's ruling that Shreveport had no right to initiate fluoridation.

The Fourteenth Amendment to the Federal Constitution prohibits the states from enforcing any law "which shall abridge the privileges or immunities of citizens of the United States"; that Amendment also prohibits the states from depriving "any person of life, liberty or property without due process of law." It is the interpretation of this latter clause that dominates the fluoridation cases.

The right of each individual to be free to treat his health as he deems best has been upheld as one of the personal liberties protected by the Fourteenth Amendment to the Federal Constitution.[3] But as has been said of all the personal rights protected by the Fourteenth Amendment, the personal right to select methods of health care may be abrogated by a legitimate and reasonable exercise of state police power to protect public health.[4] A classical statement by former Chief Justice Hughes has been a key proposition in measuring the limit of police power in relation to personal rights. It is: "Liberty under the Constitution is ... necessarily subject to the restraints of due process, and regulation which is reasonable in relation to its subject and is adopted in the interests of the community is due process."[5]

Keep in mind that the pertinent language of the Fourteenth Amendment to the Federal Constitution protects personal liberties only against state action taken without due process of law. One might, therefore, state as a principle that any of the personal liberties secured by the Fourteenth Amendment may be abrogated by a legitimate and reasonable exercise of state police power, a legitimate and reasonable exercise of state police power being the fulfillment of due process of law.

All of the other personal liberties cited in the fluoridation cases have met the same unyielding reasoning established by a long series of ruling precedents. The right to be free of interference with religious beliefs, however, has been treated more extensively and delicately by the courts.

The First Amendment to the Federal Constitution bars Congress from enacting any law with respect to the establishment of religion or prohibiting the free exercise of religion. The First Amendment, therefore, expressly governs only the conduct of the federal government; by judicial determination, however, the liberties specified in the First Amendment have been included within the liberties to be protected against state action under the Fourteenth Amendment.

A fundamental principle of law governing legislation is that the action of the legislative body is presumed to be constitutional. One of the few

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3/ Slaughter House cases, 83 U. S. 36, (1883); Meyer v. Nebraska, 262 U. S. 390, (1923).

4/ Jacobson v. Massachusetts, 197 U. S. 11, (1905).

5/ West Coast Hotel Company v. Parrish, 300 U. S. 379, (1937).

exceptions to this rule is a case which involves one of the First Amendment liberties such as freedom of worship or religion. In this type of case there is no presumption either way.[6]

There are many state actions which admittedly interfere with the religious practices of a religious sect. The prohibition against polygamy, for example, would not be waived for members of a religious group which advocated that practice. The laws governing marriage would not be waived for members of a religious sect which opposed any type of formal marriage ceremony.

Very recently in Illinois a judge ordered that a child be given a blood transfusion despite the refusal of the parents to consent; their refusal was on religious grounds.[7]

In the fluoridation cases the specific argument raised to support the claim of interference with religious freedom is that fluoridation constitutes mass medication. Fluoridation would, according to this argument, require those who oppose the taking of medicine on religious grounds to violate their tenets or would require them to obtain a substitute source of drinking water, an unreasonable alternative in the opinion of those who have raised this argument. In some of the fluoridation cases the judges have ruled that fluoridation of a water supply does not constitute the introduction of a medicine into the water supply but rather is a means of supplying a beneficial mineral content lacking in the water supply. By using this reasoning, the court at least avoids placing full reliance upon a determination that the religious practices of a group must give way to the government's decision to fluoridate the community water supply.

Actually, the judges have consistently emphasized that the constitutional guarantee of religious freedom has two distinct components. Freedom of religious beliefs is one, and that is guaranteed absolutely. The other, the freedom to practice what is dictated by one's religious beliefs, however, is not unreservedly guaranteed. It is in this latter area that state police power may intervene: A legitimate and reasonable exercise of police power will be upheld even though it interferes with the freedom of a religious group to practice in accord with its religious beliefs.

State Constitutional Issues: The right of a municipality to limit the exercise of personal liberties in pursuing its police power authority and responsibility may also be related to the "bill of rights" provisions of state constitutions as well as those of the Federal Constitution. At least one of the fluoridation cases, Froncek v. City of Milwaukee,[8] has raised the religious

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6/ See Thomas v. Collins, 323 U. S. 529; Cantwell v. Connecticut, 310 U. S. 296, (1940); Schneider v. New Jersey, 308 U. S. 147, (1939).

7/ People v. Tabrenz, 411 Ill. 618, 104 N.E.2d 769; Certiorari denied, 344 U. S. 824, (1953).

8/ 69 N.W. 2d 242, (1955).

freedom and other fundamental liberties issues primarily in relation to the applicable state constitution. One can reasonably conclude, of course, that the ruling decisions, whether based upon the state or federal constitution, would still support the right of a municipality to fluoridate its water supplies. The only practical difference would be the limitation of appeal jurisdiction: There would clearly be no federal question where only state constitutional provisions are relied upon and, therefore, no opportunity to seek an appeal to the Supreme Court of the United States. But despite the extensive treatment of the Federal Constitution's Fourteenth Amendment liberties in the fluoridation cases, the Supreme Court of the United States has ruled four times that no substantial federal question was involved in those cases and has refused to review them.[9]

Overriding Federal and State Statutes: The Federal Food, Drug and Cosmetic Act (Title 21 of U. S. Code) applies to adulteration of foods. The term "food" is defined in the Federal Act to include "articles used for . . . drink for man or other animals" (21 U. S. C. 321). In the case of Froncek v. City of Milwaukee, the plaintiff argued that fluoridation of the community water supply was the equivalent of food adulteration and, therefore, in violation of the Federal Food, Drug and Cosmetic Act. The lower court dismissed the argument summarily on the ground that there was no evidence that one part per million of fluoride in a water supply constitutes adulteration of food within the meaning of the Federal Act.

As far back as 1952, the Federal Security Agency (now the Department of Health, Education and Welfare) issued an official pronouncement in the Federal Register of July 23, (1952). That statement declares:

> "The Federal Security Agency will regard water supplies containing fluorine, within the limitations recommended by the Public Health Service, as not actionable under the Federal Food, Drug and Cosmetic Act. Similarly, commercially prepared foods within the jurisdiction of the Act, in which a fluoridated water supply has been used in the processing operation, will not be regarded as actionable under the Federal law because of the fluorine content of the water so used, unless the process involves a significant concentration of fluorine from the water. In the latter instance the facts with respect to the particular case will be controlling."

Where the state pure food laws or local laws regulating the purity of water have been cited, the courts have consistently held that the fluoridation procedure does not conflict with those laws.[10] In all instances, of course, the health authority of the state had officially passed upon the safety of the fluoridation procedure. The fluoridation cases illustrate the significant weight which the

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9/ DeAryan v. Butler, 74 S.Ct. 863, (1954); Chapman v. City of Shreveport, 74 S.Ct. 216, (1955); Dowell v. City of Tulsa, 75 S.Ct. 292, (1955); Krause v. City of Cleveland, 76 S.Ct. 833, (1956).

10/ See Dowell v. City of Tulsa and DeAryan v. Butler, ibid.

courts attach to the official rulings and opinions of federal, state and local health authorities in their expert field.

It has been argued unsuccessfully that the state laws governing the practice of dentistry, medicine and pharmacy are violated by a municipality which initiates fluoridation.[11] Again this claim presumes that the introduction of fluoride into the water supply is a form of medication because it is intended to inhibit the occurrence of a disease. Generally, the courts have disposed of this claim by referring to the principle justification for a municipality to adopt fluoridation -- that it is a public health procedure; or by refusing to hold that the introduction of fluoride into the community water supply is a form of medication.

Proprietary Powers of Municipalities: In this presentation I have not attempted to treat exhaustively all aspects of the fluoridation litigation. Many of the arguments raised in these cases together with the principles applied by the courts could be separate subjects deserving comprehensive development. I have chosen to comment at this point on what might be described as a relatively insignificant consideration within the fluoridation litigation. It is, nevertheless, true that some of those who envisioned possible litigation on fluoridation in 1950 or thereabouts, including myself, expected that the courts might rule that the initiation of fluoridation comes under the proprietary as distinguished from the governmental powers of municipalities.

The city as a proprietor has the discretion to provide, or not to provide, certain services to its inhabitants. Parks and playgrounds, for example, are provided under the proprietary power. The provision of water is basically a proprietary function; the municipal government, for example, may choose to let private sources furnish water to its inhabitants. It might be argued then that the decision to add fluoride to a water supply should be free from challenge from a minority of inhabitants since they could not challenge the right of a city to refuse to supply water in the first place.

The majority of fluoridation cases, however, assumes that the municipality must look to its governmental authority, the police power, to justify initiating the fluoridation procedure. It can be admitted that furnishing water is a proprietary function. But once that is undertaken, whether by the municipality or a privately owned company, the municipality can assert its right to promote or protect public health through the water supply medium; the users, even a small minority thereof, may assert their right to expect that their health will not be adversely affected by any action of the water supplier.

Private Water Companies: Many of the smaller communities in this country are served by privately owned water companies. Does this present a substantial problem in initiating fluoridation? Apparently it does not since water suppliers, whether municipally owned or privately owned, must conform to appropriate state and local regulatory bodies and are subject to municipal

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11/ See Dowell v. City of Tulsa and Froncek v. City of Milwaukee, ibid.

ordinances applicable to the functions of water suppliers. This can be illustrated by concrete example. In Oroville, California, the City Council enacted an ordinance requesting a private water supplier to fluoridate Oroville's water supply. The private company refused. The City petitioned the Public Utilities Commission to order the private supplier to act in accordance with the City's ordinance.

In California, the State Public Utilities Commission has broad powers to regulate all private utility companies including water suppliers. After a hearing at which the effectiveness and safety of fluoridation were argued exhaustively, the Public Utilities Commission ordered the private water company to initiate fluoridation in compliance with the Oroville ordinance.

It can be assumed, I believe, that private water companies in other parts of the country would be subject to regulation and direction similar to that exercised by the California Public Utilities Commission. Recent statistics show that approximately 190 communities served by private water suppliers now have fluoridation.

The Courts' Consideration of the Effectiveness and Safety of Fluoridation: With few exceptions the legal arguments raised against the right of a municipality to initiate fluoridation under its police powers are intertwined with efforts to show that fluoridation is not effective or that its safety has not been sufficiently proved. In most of the fluoridation cases, both sides have presented expert witnesses and have submitted scientific documents on these points. Keep in mind, however, that a judge is in no position to pronounce, as a matter of fact, that fluoridation is effective and safe. That finding of fact is made by a legislative body, the municipal board or council, before the judge is called upon to intervene.

It is the function of the court to determine whether the material facts about fluoridation, its safety and effectiveness, as determined by the municipal governing body are supported by competent evidence. Thus, the lower court records are replete with testimony concerning the effects of fluorides on the organs and tissues of man and other animals and on the teeth of persons who have been exposed to fluoridated water. What the judges have done in disposing of arguments related to the safety and effectiveness of fluoridation is to rule that there is sufficient competent evidence to support the municipal governing authorities' determination that fluoridation is safe and effective and, therefore, that fluoridated water will not imperil the health of any segment of the municipality's population.

Summary: The courts of ten states have held that the fluoridation of public water supplies does not infringe on the constitutional or legal rights of the individual and under appropriate state enabling authority is a proper exercise of the charter powers of local communities. These decisions were rendered by the courts of last resort in California, Louisiana, Ohio, Oklahoma, Oregon, Washington and Wisconsin and by trial courts in Maryland, Pennsylvania and North Dakota. These decisions are strengthened by the fact that the Supreme Court of the United States has refused to review four of these decisions for the stated reason that no substantial federal constitutional question was involved.

In marked contrast to the number of favorable holdings is the fact that only one court in this country has ever rendered an opinion adverse to fluoridation. In that one instance, a trial court in Louisiana rendered an adverse opinion which was reversed promptly by the Supreme Court of Louisiana, an action which the United States Supreme Court refused to review.

This unanimity of judicial opinion--an unusual fact in itself--gives the strongest support to the proposition that fluoridation satisfies every legal and constitutional criterion. Opponents of fluoridation have alleged that the procedure violated constitutional rights such as religious freedom and other fundamental liberties. They have argued that fluoridation represented the unlicensed practice of medicine, dentistry and pharmacy; that a community had no legal authority to adopt fluoridation procedures; that fluoridation was "mass medication" and a "poison"; that no reasonable relationship existed between it and the public health; and that the prevention of dental decay was not a proper object of community government efforts. To summarize, every conceivable legal and constitutional objection to fluoridation has been argued unsuccessfully in the ten cases in which a trial court held against the fluoridation procedure, that decision was reversed by the state supreme court.

The major cases on the subject of fluoridation are listed below:

CALIFORNIA: De Aryan v. the City of San Diego. Appellate Court of California, 260 P.2d 98; U. S. Supreme Court refused to review, 74 S. Ct. 863.

LOUISIANA: Chapman v. the City of Shreveport, Supreme Court of Louisiana, 74 So.2d 142; U. S. Supreme Court refused to review, 75 S.Ct. 216.

OHIO: Kraus v. the City of Cleveland. Supreme Court of Ohio, 127 N.E.2d 609; U. S. Supreme Court refused to review, 76 S.Ct. 833. (See also decision of trial court, 116 N.E.2d 779).

OKLAHOMA: Dowell v. the City of Tulsa. Supreme Court of Oklahoma, 273 P.2d 859; U. S. Supreme Court refused to review, 75 S.Ct. 292.

OREGON: Baer v. the City of Bend. Supreme Court of Oregon, 292 P.2d 134.

WASHINGTON: Kaul v. the City of Chehalis. Supreme Court of Washington, 277 P.2d 352.

WISCONSIN: Froncek v. the City of Milwaukee. Supreme Court of Wisconsin, 69 N.W. 2d 242.

MARYLAND: Hoffman v. the City of Baltimore. Circuit Court of Baltimore City. (Decision not reported and no appeal taken).

PENNSYLVANIA: Genkinger v. the City of New Castle Water Company. Court of Common Pleas of Lawrence County. (Decision not reported and no appeal taken).

NORTH DAKOTA: McGurren v. the City of Fargo, District Court. (Decision not reported and no appeal taken). See, however, 66 N.W.2d 207.

INDIANA: Teeter v. the City of La Porte. To be scheduled for trial in the near future. See, however, decision of Indiana Supreme Court on procedural point reported in 139 N.E.2d—, 236 Ind.—.

General discussions of the legal aspects of fluoridation may be found in the George Washington Law Review for January 1955, and in 43 ALR (2d) 453. Copies of most of the court decisions herein listed are available on request from the Council on Legislation.

THE MEDICAL ASPECTS OF FLUORIDATION*

Henry F. Helmholz, M. D.**

Dental caries, a chronic disease affecting 95 per cent of the people of the United States, is a health problem of serious concern to physicians as well as to dentists. This disease, which we call "tooth decay," is the most widespread of the chronic diseases, and it affects the young, the old, the rich and the poor alike. With the present population of the United States reported as being 171,500,000, the inevitable conclusion is that more than 162,750,000 Americans either have been victims of tooth decay or face the almost certain prospect of suffering from it. There is no self-healing of a decayed tooth, and we have learned, contrary to the old adage, that a clean tooth in fact does decay. Therefore, it is not hard to see that the consequences of this disease can be particularly serious in childhood and adolescence, and that the effects of the disease persist throughout life.

Early detection and treatment are effective in controlling dental decay, once it has started, but only a third of the people are receiving adequate dental care. Furthermore, treatment does not reduce the amount of decay currently taking place, which is on the increase. Hence, the solution to the problem must be obtained by prevention, as far as possible. It follows that the use of fluorides in preventing the potential development of tooth decay among two thirds of our people is of special interest.

Fluoride in Water is Not New

There is a vast fund of authentic information about fluorides as a result of many research studies which date back as far as 1764. These studies deal with the distribution and place of fluorides in nature, their location in the hard tissues of the body of animals and man and, since 1891, the relationship of fluorides to reduction of tooth decay. However, most of the information about the value of the fluorides in building teeth that will resist the forces causing decay has accumulated within the last three decades; in other words, since it became possible to measure accurately the content of fluoride in water to as small an amount as 1/500 of 1 part of fluoride to each 1,000,000 parts of water.

The successful development of a test for the detection of minute quantities of fluoride in water brought out a fund of information by making it possible to compare areas in which the rates for tooth decay are low with areas in which such rates are high, and with areas in which brown staining, or

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*Presented at the Conference on Fluoridation sponsored by the Indiana State Dental Association and the Indiana State Board of Health, Indianapolis, Indiana, October 2, 1957.

**Health Chairman, National Congress of Parents and Teachers Association and Mayo Clinic staff member, Rochester, Minnesota.

disfiguring dental fluorosis, occurred. The important result of these comparisons was the discovery that too small an amount of fluorides in the drinking water allows a high rate of tooth decay, whereas too great an amount causes disfiguring fluorosis of the enamel of teeth. On the other hand, it was demonstrated that an optimal amount of fluoride ranging from 0.7 part per million to 1.2 parts per million, will reduce tooth decay by at least 50 to 60 per cent, without objectionable staining of the teeth. The tests also made it possible to compare areas in which there were various concentrations of fluoride in water so that standards for safety could be set up and the need for fluoride could be appraised. These determinations of fluoride content also revealed that more than 90 per cent of our public drinking-water supplies contain some fluoride naturally, ranging from a trace (0.05 ppm) to 8 ppm, with the concentration in two water supplies reaching 14 and 27 ppm, respectively. These two concentrations recently were reduced.

What I wish to point out to you is the fact that fluorides and fluoridation have been studied more intensively and over a longer period than any other public-health measure in history.

Fluoride in Nutrition

Fluoride is one of the 103 basic elements in nature. It is a trace element in nutrition. It is so universally present in small amounts in almost all foods that it is practically impossible to devise a fluoride-free diet. We obtain about a third of our fluoride requirements from our food and about two thirds from our drinking water. Fluoride is a natural constituent of all the hard tissues of the body: the bones, the teeth, the nails, the hair, and the tendons. Most of our foods contain from 0.3 to 7.0 ppm, and in some dried leaves, such as tea leaves, the content of fluoride is as high as 70 ppm. It is interesting to note that fluoride content of the yolk of an egg, which is the food for the developing baby chick, contains on the average about 7 ppm. Since these foods are consumed in varying amounts and since water with a fluoride content of 1 ppm is used in preparing these foods and for drinking, the needed balance of fluoride is obtained.

Nature's Experiments

Nature provided a really extensive laboratory for study of the effects of fluoride on people, by naturally supplying fluoride in the drinking water available to about 4,500,000 U. S. people. The fluoride content of this water ranges from 0.7 to 14 ppm.

By determining the fluoride content of waters in the various communities and then determining the status of the teeth of a reasonable number of persons, it has been possible to divide the range of fluoride content of 0.05 to 14.0 ppm into three groups as follows:

1. In this group the fluoride content is too low. It ranges from 0.05 to about 0.3 ppm. Among persons who use drinking water in this group, with a low content of fluoride, the rate of dental decay is high.

2. In this group the range of fluoride content is 0.8 to 1.2 ppm., which is ideal. Persons who use drinking water in this group have 50 to 60 per cent less dental decay than the persons who use drinking water of group 1, and they have no aesthetically objectionable dental fluorosis.

3. In this group the content of fluoride is more than 2 ppm. Persons who use drinking water in this group with more than 2 ppm. of fluoride have reduced dental decay, but a certain percentage of such persons will have varying degrees of disfiguring dental fluorosis. The percentage of dental discoloration increases as the concentration of fluorides in the water increases.

It is useful to recall that the foregoing three groupings apply also in a similar manner to the use of vitamin D. That is, too little vitamin D results in rickets; the ideal amount, 400 to 800 units, prevents rickets; but too much vitamin D may result in serious changes as a result of infiltration of the lungs and kidneys by calcium.

Thus, the ideal concentration of fluoride in drinking water of about 1 ppm. was determined by nature's experiments as indicated by the lowered incidence of dental decay, without any discoloring dental fluorosis.

Allowance also must be made for variations in the consumption of water resulting from outdoor temperatures and the demands of physical work, so that in southern states the ideal content of fluoride in water would be considerably less than that in water in our northern states.

In these communities, as in any community, no two children will drink exactly the same amount of water. A wide range of consumption of water with a fluoride content of 1 ppm. is possible with entire safety. During the digestive process, enough fluoride is absorbed to meet the needs of the body and to reduce dental decay by half without causing any aesthetically objectionable staining of the enamel of teeth. In Colorado Springs, where the natural concentration of fluoride in the public water supply is 2.6 ppm., there is the characteristically low rate of dental decay, but some persons in that place do have discolored dental fluorosis. In spite of this dental discoloration, the city continues to use the water with the fluoride content of 2.6 ppm.

It is the considered opinion of the members of the El Paso County Medical Society (Colorado Springs) that: "We have not experienced any clinical symptoms which can be attributed to the use of Colorado Springs water containing 2.6 ppm. of fluoride."

Safety of Fluoridation

No unfavorable symptoms within the body have been encountered when the fluoride content of water is 1 ppm., and only discoloring of dental enamel occurs among some children when the fluoride content of water is 2.6 ppm. For comparison, then, it is necessary to consider a community in which the content of fluoride in the water supply is excessive. Such a community is Bartlett, Texas, where for 50 years the inhabitants drank water containing 8 ppm. of

fluoride. Here the first noticeable effect is marked discoloration of the teeth of persons who were born and continued to live in that city. In a careful study conducted among residents of Bartlett who used water containing 8 ppm. of fluoride and residents of the adjacent city of Cameron who used water with a fluoride content of 0.4 ppm., there was an excellent opportunity to compare two communities, one of which used water containing 20 times as much fluoride as the water of the other. Two surveys were made, 10 years apart, the first in 1943 and the second in 1953, among persons who had had an average exposure of 36 years to 8 ppm. of fluoride in the water at Bartlett and 0.4 ppm. of fluoride in the water at Cameron. The only difference in the findings that was consistent, and the only one attributable to this great difference in fluoride concentration in the water supply, was the severe degree of disfiguring dental fluorosis in Bartlett and the absence of such a condition in Cameron. Dr. Sosman, professor of radiology in the Harvard Medical School, after studying the x-rays made during the survey, wrote: "In summary I would say that from my study of the material I would conclude that fluorine of 8 ppm. in the drinking water has no deleterious effect on the individual living in the area and drinking that water. In fact, there may be a slight benefit in the sense that it keeps the bones from softening as the patient grows older."

In Bauxite, Arkansas, nature did a 19-year experiment in which it was learned that a fluoride content of 14 ppm. in the drinking water did not give rise to any unexplained deaths or any unusual signs or symptoms except intense disfiguring dental discoloration.

Let me ask this question: What scientist would dare to give 40,000 people five to 14 times the optimal level of fluoride of 1 ppm., for as long as 50 years, simply to prove that the level of 1 ppm. is safe? Yet that is exactly what nature did: she proved for us once and for all that no one had died from the effects of these higher amounts of fluoride in the drinking water, and demonstrated that mottled dental enamel was the only constant finding among those who had lived in the areas concerned both during the formative period of their teeth and throughout their entire lives. The mottling occurred only when higher amounts of fluoride were consumed while the teeth were being formed.

As the result of nature's experiments, we can say that unless discolored dental fluorosis appears on the teeth of the children growing up in a community, no symptoms occurring in members of such a community can possibly be due to the toxic effects of fluoride.

Medical Aspects

A study of mortality statistics was made in 64 cities, each of which had a population of 10,000 or more. These cities were divided into two series. One series consisted of 32 cities with a total population of about 1,250,000 and water supplies with a fluoride content of less than 0.25 ppm. The other series was constituted by 32 cities with a total population of about 1,000,000 and water supplies with a fluoride content of 0.7 ppm. and more. No statistically significant differences between mortality rates from all causes were found in the two series. This study included mortality rates for heart disease, cancer, intracranial conditions, nephritis and cirrhosis of the liver.

A study of mortality statistics in 22 cities in Illinois, conducted by the Illinois Department of Health, disclosed no statistical difference in mortality rates between areas in which the water content of fluoride was high and areas in which the water content was low, during the ten-year period between 1940 and 1950. A conclusion of the Illinois study was: "It seems highly improbable that the risk of death is increased by drinking fluoridated water." The comparisons were for deaths due to all causes, exclusive of homicide, suicide, and accidents. Also compared were death rates due to heart disease, cancer, nephritis and diabetes.

The Wisconsin State Board of Health carried out a similar study in which mortality statistics in a series of towns with 1.0 to 2.3 ppm. of fluoride in the drinking water were compared with mortality statistics from a second series of towns with little or no fluoride in the water supplies. As between the two series, no significant difference in death rates from any cause was found, when homicide, suicide, and accidents were excluded.

A study in Great Britain disclosed the same absence of differences in mortality rates among consumers of water with a high content of fluoride and consumers of water with a low content of fluoride.

A study of mortality statistics at Grand Rapids, Michigan, by the Michigan Department of Health, showed no statistical differences in infant death rates or in mortality rates during the 4 years (1941-1944) prior to the use of fluoridation and during the latest 4 years (1951-1954), after 6 to 10 years of fluoridation. It was found that after fluoridation the infant death rate was eight less per 1,000 live births than before; the death rate due to heart disease was 34 less per 100,000 population than it had been before; the death rate due to nephritis was 39 less; the death rate due to diabetes was 11 less; and for intracranial lesions the death rate was 5 more. The statisticians of the Michigan Department of Health concluded that there was no significant difference caused by the intake of fluorides.

Physical examinations carried out during studies of fluoridation at Evanston, Illinois, Sheboygan, Wisconsin, and Newburgh, New York, have shown no significant differences in the findings after 10 years of fluoridation. The data collected of about more than 12,000 persons are convincing in establishing the safety of fluoride when it is ingested at amounts recommended by the health departments for the fluoridation of public water supplies.

In the light of all the evidence dealing with the effects of fluoride on the human body, even though there are many instances of beneficial effects, no claim for such bodily benefits are made by those who recommend fluoridation other than that the procedure reduces the incidence of tooth decay. However, these many instances of beneficial effects most certainly disprove the claim of a few physicians opposing fluoridation who charge that 1 ppm. of fluoride in the drinking water is poisonous. It is an accepted fact that discoloring dental fluorosis is the first sign of any harmful effects of fluoride in excessive amounts in the drinking water. Therefore, no symptom or combination of symptoms can be ascribed to fluoride in the drinking water unless the fluoride also produced mottled tooth enamel among persons known to have drunk that water as children, from birth to 10 years of age. In no area in the

world have other signs and symptoms of fluoride poisoning been caused by the drinking of water, unaccompanied by brown staining of the teeth or mottled enamel of the growing children.

In cities in which the content of fluoride in the public water supply has been adjusted to 1 ppm. and in which fluoridation has been continued for 10 to 12 years, as in the case of Grand Rapids, Michigan; Newburgh, New York; Brantford, Ontario; Evanston, Illinois; and Sheboygan, Wisconsin, careful examinations by dentists have found no evidence of aesthetically objectionable dental fluorosis in any of the children. Careful physical and laboratory examinations conducted among the residents of Grand Rapids, Michigan; Newburgh, New York; Evanston, Illinois; and Sheboygan, Wisconsin, all have disclosed no untoward symptoms among persons consuming fluoride-containing water, nor have physicians identified a symptom or combination of symptoms resulting from ingestion of fluorides in water.

Some Objections Raised

When it is considered that more than 1,530 communities have fluoridated their public water supplies serving more than 33,000,000 people (including 22 of the larger cities of more than 200,000 population each, furnishing fluoridated water to more than 18,000,000 people in the United States) it is logical to ask, "Why hasn't every community in the country done the same thing for the sake of its children's dental health?"

The answer is that, chiefly because of certain misconceptions and objections voiced by people who are not yet fully familiar with the truth about fluoridation, the progress that would be expected has not been made. Let us look briefly at the principal objections to the fluoridation of water and compare them with the known facts.

Objection 1. Fluoride is a substance found in rat poison and in insecticides.

Fluoride is found in these preparations but we tend to forget that almost any substance can act as a poison when it is given in excessive amounts. For instance, this is true of as potent a poison as chlorine, used in minute amounts almost universally to make drinking water safe to drink. It is true of our common table salt and even of water itself: both can kill you if taken in excess. Fluoride is perfectly safe in an amount of 1 part per 1,000,000 parts of water, as evidenced by those 3,000,000 people who have been drinking naturally fluoridated water for many generations.

Objection 2. Fluoride is a powerful poison.

This statement is erroneously deduced from the observed toxic effects of the intake of much greater amounts of fluoride than those considered herein, and usually in concentrated powder form. On the basis of studies on high intake of fluoride we learn the following.

a. From studies of attempts at suicide we know that 4 to 5 gm. (a teaspoonful) of fluoride taken by mouth usually will be fatal.

b. The one death ascribed to fluoride poisoning from drinking water with a fluoride content ranging from 2.4 to 5.7 ppm. was without a question of a doubt the result of a very marked impairment of the kidney function caused by obstruction in the bladder, and in addition a severe terminal infection of the kidneys and the entire urinary passages.

c. We know that cryolite workers, without filter masks, inhale dust containing fluoride and that after 20 to 30 years marked changes develop in their bones. By measuring the output of fluoride in the urine, the intake was determined as 5 to 20 times the amount that would be taken in with drinking water containing 1 part of fluoride per 1,000,000 parts of water. Roholm stated, "There is nothing to show that working with cryolite reduces the period of life."

d. The use of large doses of sodium fluoride in the treatment of leukemia, involving the giving of 5.6 gm. by vein in 9 days to a 16-year-old girl, did not produce any sign or symptom of toxicity. Patients seriously ill with cancer were given .08 gm. of sodium fluoride four times a day, with an antacid, for as long as 6 months, without the appearance of any acute or chronic toxic effects ascribable to fluoride. This amount is about 144 times the amount of fluoride that would be ingested in water containing 1 part per 1,000,000 or, stated differently, it would take 71 years for a person drinking water containing 1 part of fluoride per 1,000,000 parts of water to take in the same amount of fluoride that was taken in by the cancer patient in 6 months. In contrast to the total absence of signs or symptoms produced by the ingestion of 0.144 gm. of fluoride daily for 6 months in the cancer patient is the case reported by Dr. Waldbott, listing symptoms as appearing after 2 years' intake of water with a fluoride content of 1 ppm. In 12 days the cancer patient took in more fluoride than Dr. Waldbott's patient ingested during the entire two years, if she drank as much as 2 quarts daily. In total amounts, the cancer patient took in 25.9 gm. of fluoride in 6 months without symptoms. The patient of Dr. Waldbott took in 1.46 gm. of fluoride in 2 years with many symptoms. Only one conclusion can be drawn from these figures; namely, that whatever the cause of the reported syndrome, it is not the result of ingestion of sodium fluoride. These foregoing attempts to cure cancer and leukemia with fluoride proved to be of little value, but they do indicate that the fear of fluoride poisoning from a concentration of 1 part per 1,000,000 parts of water is entirely unfounded.

Objection 3. Fluoride causes unsightly stains on the teeth.

This is partly true. Water with a high concentration of fluoride, when drunk during the period in which the teeth are "laid down," does cause stains. Water containing the recommended concentration of about 1 ppm. does not cause disfiguring dental fluorosis. Two persons with dental discoloration pictured in a paper by Dr. Exner were stated to have acquired the condition from drinking water with "considerably less than 1 ppm. of fluoride" proved in later investigation, one to have drunk water in childhood with 2.1 ppm. of fluoride and the other to have drunk water of an unknown fluoride content, the source of which was a filled-in well the fluoride content of which had never been determined.

Objection 4. Fluoridation of water is still in the experimental stage.

This is untrue. The objectors overlook the fact that for many decades nature herself has been carrying out such experiments in communities in which people have always drunk water containing a wide range of fluoride contents.

Objection 5. Fluoridation of the public water supply is mass medication.

This objection will not stand up. Actually, fluoridation of water is not a process of treating dental decay, but one of reducing the incidence of dental decay. Fluoride is not a drug which will counteract the effects of disease, but a food substance already present normally in water. It is a constituent, the quantity of which needs to be increased to the optimal nutritional level. Fluoridation is a process of food fortification, as is the addition of vitamin D to margarine, the compulsory addition in 26 states of vitamin B and iron to flour and bread and the addition of iodide to our table salt.

Objection 6. Fluoridation is socialized medicine.

The objection is faulty. Fluoridation is no more socialized medicine than are all the other preventive methods that the medical profession has introduced, such as chlorination of water, pasteurization of milk, immunization against smallpox, diphtheria, and typhoid fever, the killing of mosquitoes to prevent malaria and yellow fever and many other effective procedures.

Other Diseases Wiped Out by People's Joint Action

If we compare the campaign against dental decay with that against diphtheria and typhoid fever, we find some similarity. In the fight against diphtheria the use of antitoxin was a partial solution, and immunization with toxoid was the means of finally wiping out the disease. The boiling of milk and water in the home greatly reduced the incidence of typhoid fever, and when pasteurization of milk and chlorination of our water supplies were undertaken on a mass scale, typhoid was all but wiped out. So far as dental caries is concerned, fluoridation of water is only a partial solution but it is an important one, and it is hoped that further research by chemists and medical, dental, and public health personnel will eliminate tooth decay entirely.

We have always had questioning of, and certain opposition to, change. There were loud objections to immunization against smallpox and diphtheria, and more recently, immunization against poliomyelitis has been questioned. Again, earlier, some people fought against pasteurization of milk, chlorination of water, the iodizing of table salt and the fortifying of certain food products with vitamins and minerals.

Today some sincere people are misinformed about fluoridation and are following the uninformed opposition rather than searching out the well-established facts about the procedure. Some of the earlier opponents of fluoridation have long since come out in favor of it, but their words of long ago are still being quoted as urging contemporary caution. Nonetheless, fluoridation is being accepted by the public, gradually and steadily as all salient facts are being brought out. A recent nation-wide poll on fluoridation

by Roper showed that 53 per cent of those questioned thought it was a good idea, 18 per cent thought it was not, and 29 per cent did not know.

Some Special Studies

A study made by the Health League of Canada is of interest. Those who conducted the study wrote to every university department of preventive medicine in the United States and Canada asking for an opinion (1) "on fluoridation," and (2) "on whether there is any evidence of fluoridation being likely to do any damage to the human organism if used in water supplied in concentration of about 1 ppm."

Of the 79 departments of preventive medicine responding, not one opposed the principle of fluoridation. Seventy-two were "more or less emphatically in favor of fluoridation as a means of preventing caries without doing harm." Six declined to express an opinion because of "unfamiliarity with subject," and one expressed a desire for "caution and further study" but was not opposed to fluoridation.

The New Zealand Commission of Inquiry on Fluoridation, after many sessions in which evidence pro and con from all parts of the world was considered, came to the following general conclusions concerning the relationship of fluoride to health.

"1. Fluoridation does not add a substance foreign to the water, but merely brings about a slight change in the concentration of the fluoride already present naturally.

"2. Fluoride is a nutriment and is beneficial in proper amounts. Like other foodstuffs, it has adverse effects when ingested in excess.

"3. In the proposal to fluoridate public water supplies there is no risk of excessive ingestion, there is no risk of chronic fluoride poisoning and acute poisoning can be disregarded entirely.

"4. No harmful effects on health will follow the fluoridation of water supplies, whether in respect to the complaints specifically made before us or otherwise."

Serious attention was paid to the contributions and claims of Spira, Waldbott, and Exner. Ample reason is given to cast doubt on the validity of their evidence. In particular it is stated: "We are of the opinion that the individual signs and symptoms of the Spira-Waldbott syndrome may be due to any number of unrecognized causes and we are satisfied that there is no causel relationship between any of the signs and symptoms and the ingestion of water containing 1 ppm. of fluoride and food cooked in the water."

"We consider Exner's report as a whole to be lacking in objectivity, that it frequently fails to represent the real opinion of the quoted authorities, and that it is the work of a skillful propagandist."

Approval of Fluoridation

The array of medical, dental, public health, and chemical organizations that have expressed their unqualified approval of fluoridation of water supplies is such that the opinion of a few uninformed persons cannot be allowed to hold up medical progress. Some of the outstanding national health organizations that have endorsed fluoridation are the American Academy of Pediatrics, American Association of Public Health Dentists, American Association for the Advancement of Science, American Dental Association, American Cancer Society, American College of Dentists, American Hospital Association, American Medical Association, American Public Health Association, American School Health Association, American Nurses' Association, American Water Works Association, Commission on Chronic Illness, Federation Dentaire Internationale (International Dental Federation), Inter-Association Committee on Health, Industrial Medical Association, National Institute of Municipal Law Officers, National Research Council, United States Public Health Service, Association of State and Territorial Dental Directors, Association of State and Territorial Health Officers, American Pharmaceutical Association, American Veterinary Medical Association, College of American Pathologists, and the World Health Organization.

The Committee on the Public Health Aspects of Fluoridation of the World Health Organization was composed of members from Sweden, Brazil, India, Great Britain, Switzerland, and the United States. It reviewed the fluoridation programs in 17 countries and found that the use of fluoridation at 1 ppm. prevents tooth decay and is safe, effective, and practical.

Health Benefits

A very important health benefit of fluoridation is the useful retention of more of our teeth for proper mastication. We spend $1,500,000,000 annually to treat mouth infections, fill cavities, and extract and replace our teeth with dentures. It is possible that by the aid of fluoridation we can reduce the number of cavities to such a point that the remaining cavities can be filled and other dental needs met by the present ratio of dentists to population. We can greatly decrease the number of people who are self-conscious because of missing teeth. We can greatly reduce the pain and discomfort resulting from infected teeth. We can reduce the number of infections of the jaws. We can reduce the number of deaths caused by Streptococcus viridans infection after extraction of infected teeth in patients with heart disease.

Summary

Finally, I should like to pose for you four questions and four answers.

1. How many deaths in the United States have been caused by the drinking of water with a fluoride content of up to 14 ppm.?

The answer: none.

2. How many instances of proved fluoride poisoning have been produced by the drinking of water with a fluoride content of about 1 ppm.?

The answer: none.

3. How many instances of disfiguring dental fluorosis have been produced by the drinking of water naturally fluoridated or adjusted to the recommended fluoride content of about 1 ppm.?

The answer: none.

4. How many communities have failed to reduce dental decay markedly by fluoridation at 1 ppm. based on a 5-to-10-year study?

The answer: none.

ENGINEERING ASPECTS OF COMMUNAL FLUORIDATION*

Harry E. Jordan**

In 1908, Jersey City, New Jersey, added to its water treatment facilities the use of chlorine. I was fortunately able to study that operation. By March, 1909, they were adding chlorine to the water supply of Indianapolis. Past procedure, as it has extended over the United States, has resulted in a saving of at least 75,000 lives of people who might have died from typhoid fever. We never had, in relation to chlorination, the mass opposition which now relates to fluoridation. Neither did chlorination proceed as rapidly as fluoridation. As one of the previous speakers pointed out during the day, the public attitude toward medical advances is peculiar in its resistance to actions which are of a general nature -- vaccination -- water treatment in detail. And, in many instances advances which are of great importance to the public have been delayed by the opposition of people who prefer the status quo. Now, that is just a little background to some of the advances in water treatment which I have witnessed.

In 1945, after a very extensive amount of research, by various people in the dental field and the public health field, fluoridation was initiated in Grand Rapids, Michigan; Newburgh, New York; and Brantford, Ontario. During the years immediately following, the American Water Works Association, through its officers, took note of this change which was going on in water works practice; and finally in January, 1949, it appointed a committee to develop an expression of policy for the Association. I want to give you the names of that committee and their standing in our field. The chairman was Dr. A. P. Black, who was the head of the Department of Chemistry of the University of Florida; later he became President of our Association. The next man on the list was Dr. A. E. Berry, who for years was the Director of Sanitary Engineering of the Ontario State Department of Health; and he is now the Water Commissioner of the Province of Ontario. Dr. Berry has since been a president of our Association Mr. Linn H. Inslow, Editor of Water and Sewage Works magazine; and at that time, he was president of our Association. Mr. H. A. Faber, then a research chemist for the Chlorine Institute; and he is now the coordinator of research for the U. S. Public Health Service. Mr. Raymond Faust, then chief of the water supply section of the Division of Engineering for the Michigan Department of Health, who was very largely responsible for the public health relationship to the Grand Rapids study. Mr. W. V. Weir, then and still the President of the St. Louis County Water Company; and again he is a past-president of our Association. I read you these names to indicate that the committee, which our organization appointed, was selected at the highest level within our organization -- people of broad experience and competence. The advisor to the committee was Dr. H. T. Dean of the U. S. Public Health Service.

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*Taken from a tape recording of Mr. Jordan's talk at a Fluoridation Conference at the Indiana State Board of Health.

**Secretary - American Water Works Association.

On May 29, 1949, that group rendered a report to our board of directors which the board approved. The report covers a number of printed pages, but the opening paragraph is the key paragraph of the document. And it says this: "In communities where a public demand has developed, and the procedure has the full approval of the local medical and dental societies, the local and state health authorities and others responsible for communal health, water departments or companies may properly participate in a program of fluoridation of public water supplies." That was accepted by our officers in 1949. They have never changed a word of it. They have been repeatedly asked by people, who think it is too weak or too strong, to change it. It was reaffirmed in 1951, 1952, 1955, 1956 and again in 1957. As a matter of fact, every time the question arises that we modify our basic statement of policy it is almost impossible to get the directors to stop long enough to carry on any discussion of a motion to reaffirm their stated policy. They will not change their minds. Now, that statement of policy amounts to this. It emphasizes the responsibility of the medical and dental professions and of the public health authorities for advice concerning the need for fluoridation of a public water supply. It advises the members of the Association to follow willingly and intelligently professional advice whenever the public authorities, such as the city council or companion body, have approved the procedure. The Association concerns itself with the engineering aspects of fluoridation: the installation and operation of proper equipment; the use of acceptable materials; the safety of the people handling the material; the laboratory controls and records of the fluoride content of the water as distributed; and the effect of fluoride-bearing water on the commercial and industrial uses of that water. We have tried with the utmost diligence to advise our members, who are engineers or chemists, to refrain from discussion of the medical and dental aspects of fluoridation. We are concerned with the engineering and practical operating aspect of the procedure.

Now, Dr. Helmholz, this morning, pointed out to you very carefully in his text and in one of the slides which he presented, the fact that a very substantial number of people in the United States (three million of them — plus or minus) have been using fluoridated water from time immemorial. As he said, "It is nature's experiment on the validity of fluoridation." A great amount of material has been developed from the actual experiences in these communities where fluorides have naturally occurred before we ever heard of fluoridation, Dr. McKay, Dr. Dean or any of the rest of the people. From an operating standpoint, we see no difference. No chemist has ever demonstrated any difference between the quality or characteristics of the fluoride naturally occurring in these gifted communities (in Indiana which were mentioned this morning) and that which is added in the communities where it's controlled. Fluoride and sodium fluoride is fluoride. It has no quirks. It is no different. It is the same material.

Now, beginning with the Grand Rapids Study in 1945, as I said a moment ago, fluoridation has spread much more rapidly in the United States than did chlorination. In spite of the fact, from my own personal opinion as an operating water works man, chlorination was a more important advance from the general public health standpoint (I say that somewhat sacrilegiously in this setting). Chlorination is somewhat more important than fluoridation. Chlorination saves lives. Fluoridation makes it possible for you to eat too much; but I still believe in it thoroughly.

As of the first of September this year, 798 water systems serving 1532 communities with a population of 32,319,603 are using water with controlled fluoridation. I know of no change in technical procedures in any manner affecting the public which has been effected so promptly.

I am supposed to point out to you some of the details of the general fluoridation practice. Some of this material I don't think would bother some of you too much. There are three principal materials used in the fluoridation of public water supplies. The primary one and the one we used first was sodium fluoride. That is the material which the opponents of fluoridation refer to most commonly as "rat poison." There is another one — sodium silicofluoride — which is more widely used today than sodium fluoride. Then, there is hydrofluosilicic acid, which is used in a smaller number of communities, but they are all large communities. What are the reasons for using these different materials? Silicofluoride will cost less than sodium fluoride per pound of the active chemical. Hydrofluosilicic acid costs a little more today, but its price is extraordinarily variable depending upon the size of the community. The sodium fluoride and the silicofluoride are granular powder materials. Fluosilicic acid is a liquid and can only be used in plants which are within reasonable trucking distance of the place where the material is produced. It is used, for example, in Chicago and Philadelphia for the very simple reason that it can be transported directly from the source of supply to the storage tanks without any further change in the material. It is fed to the proportioning machines, to the water supply and to the individual user. That costs less money than the other materials, but one must be operating a large plant and operate it close enough to the source of material for proper use. One can't transport fluosilicic acid from Chicago to Phoenix, Arizona, and use it properly in Phoenix. It will cost you money.

There is nothing involved in the handling of fluorides that is uncharted territory for the water works operators. Sometimes I rather hesitate to give you a list of the various materials that are used or can be used in treating a public water supply. It may frighten someone. As I mentioned in the beginning, alum is a component in the water treatment of many hundreds of cities in the United States. Traditionally, it was used by the Chinese in pre-Christian activity to clarify the water they used in that country. But, alum is only one of the clarifying materials. We can use iron sulphate. This is another material that changes when you put it in a water which is muddy and takes the mud out. Lime is used to change the reaction of the water. Hundreds of thousands of tons of basic materials are used. Chlorine is used to kill bacteria. Chlorine dioxide is used to "temper-off" the bite of chlorine. Sodium "hexametaphosphate" is used to reduce the corrosive tendency of water. Water is not a peaceful material. Even as the rain falls, it has characteristics which we wish to change, and modern water treatment involves the use of many, many materials. So far as I know personally, fluoridation has not required the development of any new pieces of equipment. I think that all the equipment we are using to add fluorides to water today were used for some procedure before fluorides came on to the scene. The reason I point that out to you is that many people think fluoridation involves the use of materials and equipment which may be dangerous in the hands of the water works man. We have lived with these materials and equipment for years. We know that everyone of them is cranky and that everyone of them will act up when we don't want them to.

Now, I wish to point out one of the factors about fluoridation that many people have misrepresented and misunderstood. The opponents of fluoridation have spent a great amount of time saying that the addition of fluoride to public water supplies eats up the water mains. This is absolutely untrue. Yet, it is one of those things which is based upon a vestige of fact. What fluorides do is to corrode rather rapidly the equipment in the plant itself. As the material is being put into solution, it corrodes that pipe, or plugs it up, if you don't take care of it. The difficulties never get outside of the water treatment plant. But, every water works man in the country, if he has any sense at all after he has had six months' experience with fluorides, knows that the material has certain idiosyncrasies when in the water works plant; and he must watch for these. Now, the problem, he must have plenty of water in the dissolving pot underneath the feeding machine (the proportioning machine) to get the fluoride into solution. If he is feeding the powder, he must get it into solution quickly in the extent that he wants it. You can't send out a slurry safely. It must be constantly agitated. I think everyone of us at home, if we are cooking something, know that we have to stir it once in a while. The connecting piping with the equipment must be ample and not too large. In other words, it must be large enough to carry away the material but not so large that the material which may not have gone into solution perfectly settles down in the piping system and finally plugs it up. And, last, flushing connections on these piping connections must be provided so that occasionally, once a day or once a week, the water connections to that machine with the fluoride added are flushed out thoroughly so that nothing settles there. Now, there are certain types of metals, iron for example, that do not resist the corrosive effects of concentrated fluoride; and if you flush those pipes out often enough, you will not have trouble. If you don't flush them out, you can have those pipes eaten through. Chlorine is far worse than fluoride in that regard. Even alum is bad. The materials we use in water treatment are not peaceful chemicals. So much for that.

Now, I would like to make a few statements concerning the people who work with the materials. The water works man at the operating level, I mean the man who handles the material, must be given certain basic safety instructions. I should point out to you that our Association has published a manual of some 150 pages Safety for Water Works Men. The water works industry, as a whole, has one of the worst accident records of any public utility. The electric people, telephone people, and gas people have for a number of years done a much better job of instructing their personnel in safety matters than we have. The trench in the street gives us more trouble than anything else. In handling fluorides, the man is working with a powder; therefore, dust removal equipment is indicated. He should have protective clothing to wear at the time he is handling the chemicals. He should have protective gloves. He should have respirators. Now, those are basic, sensible safety procedures in the use of any dusty materials. And yet, the opponents of fluoridation have made a great amount of "hullabaloo" over the man in Coeur d'Alene, Idaho, who completely disregarded for five years the instructions he was given to take care of himself. Time and again, he was told that he was not following safety procedures. He became sick. He sued the water department. He got damages — he shouldn't have. The defense was wrong. The defense should have pointed out he had, over the period of five years, completely disregarded the safety precautions that he had been instructed to follow. So much for that.

So far as the major water treatment plants of this country are concerned, including the one right in this city (Indianapolis), there have been no adverse conditions resulting from the handling of fluoride by the men employed in the plant. This simply amounts to the fact that if you don't close your eyes when you cross the street you don't get run over. If you follow the safety procedures for handling fluorides, you are not adversely affected.

Now, I want to discuss briefly one of the questions which came into this true and false questionnaire this morning; then I am through. Our Association has given much consideration and has spent a great amount of time investigating the effects of fluoridated water upon commercial or industrial operations. We stay out of the physiological effects; that is a matter for the physicians and dentists; but so far as the commercial aspects of fluoridation are concerned, we know of no instance in which a commercial process has been adversely affected by the use of fluoridated water. I should point out that in two cities; namely, Philadelphia and Charlotte, N. C., the change to fluoridation of the public water supply had an adverse effect upon the production of artificial ice; until the ice manufacturers were reminded of the fact that for years they had had a procedure for the correction of the production of what is known as brittle ice. Both Charlotte and Philadelphia have very soft water supplies. With a soft water supply, with a zeolite softened water in an ice plant, one will make brittle ice unless he uses (I think it is) ammonium chloride which hardens the ice. They corrected the condition in Charlotte and Philadelphia very quickly by instructing the ice plant people to use the ammonium chloride. We know of no adverse effects due to fluoridation to the following industries: soft drink production, brewing, plating, steam generation, textile operation, fruit canning, candy production, baking, corn products processing, photographing developing, meat processing, rubber goods manufacturing, laundering, distilling, oil production, that is peanut and cotton oil, sea foods, malt liquors, pickle packing, ice cream production, tobacco processing, canning, drying fruits and vegetables. Now, the reason I read that list to you is that we have investigated to the utmost possible extent the effect of fluorides in industries in every city that we know where fluoridation is practiced. Do the people who engage in these businesses report any adverse conditions? The answer is uniformally no. One more sentence and I am through. We ran into the case of the Beechnut Packing Company in Rochester, N. Y. Whatever else I can say about that company, they are very careful operators. Their chief chemist is a most competent individual. When fluoridation was initiated in Rochester, they started to use the fluoridated water. They had no difficulty in any regard except in the production of precooked oatmeal for infant feeding, and they had no adverse results from that except the concentration of the fluoride in the boiling down of the water with the oatmeal. This produced an end content of fluoride higher than the Food and Drug Administration limit, to which a man from the American Dental Association made reference a while ago. That is simply an arbitrary limit set by the Food and Drug Administration, and the quotation from their statement indicated that they would change this limit at any time anyone pointed out to them that it interfered with the production of useful materials. The Beechnut Company did not choose to open that question with the Food and Drug Administration. They simply changed to the use of water which did not contain the added fluoride in the cooking of the oatmeal. And, we know that other infant foods are on the market and widely used which contain more fluoride than the Beechnut precooked oatmeal. I close with that particular case for the simple reason

that I want to be completely frank with you on the one case where we have found there was an interference with the commercial production. As far as I am concerned, practically and philosophically, it would have been very simple for them to have corrected that ruling of the Food and Drug Administration by the filing of basic facts with them. They didn't choose to do that. There we are. As far as our industry is concerned, we are trying to operate with the physicians and dentists to carry on the engineering aspects of fluoridation. It is just another chore in a day's work and most of our people are very proud of the part they are playing in it. Thank you.

WATER FLUORIDATION--AN EFFECTIVE HEALTH MEASURE*

Donald J. Galagan, D.D.S., M.P.H.**

We live in an age of open competition. Records are made—only to be excelled. Rules more often are broken in this period of change—this time of working for a better tomorrow. The rule which contends that the majority always wins is a case in point. According to the findings of a national poll on fluoridation taken recently by Elmo Roper and Associates, the majority of the people favor fluoridation.

The results of the poll, printed by newspapers throughout the country, show that 53 per cent of the people interviewed think fluoridation is a good idea; 18 per cent think it is not; and 29 per cent do not know. Despite this majority report, municipal battles over it have been violent, and fluoridation has been defeated in local referendums more often than it has been approved. What has caused this turn of events? How can a measure which the people want by a three-to-one ratio fail to be passed when citizens are given a chance to vote on it? "Public referendums," Mr. Roper comments, "do not always reflect what the majority of the people really want. What they reflect, too often, is the will of an organized minority interested enough to go to the polls in great numbers to drown out a larger, but more apathetic majority."

Mr. Roper merely has documented what scientists and health workers long have suspected. Dr. Harry Lyons, American Dental Association President and Dean of the School of Dentistry of the Medical College of Virginia, recently

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*Presented at a State Conference on Fluoridation, Sponsored by the Indiana State Board of Health, Indianapolis, Indiana, October 2, 1957.

**Assistant Chief, Division of Dental Public Health, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C.

pointed out that "The electorate might destroy itself by injudicious use of referendum on health measures...It is high time that people pay more attention to their dedicated health servants than to those who arouse their passions by scare talk and general misstatement of fact...A referendum to consider matters of health or any other field of science cannot establish truth or fact. It can establish only, the weight of prejudiced opinion for or against a measure. That measure of opinion will depend upon which side did the better job of propagandizing the electorate."

What is causing all this furore? Why are we advocating the fluoridation of community water supplies in the face of continued and determined opposition? Why are we in the dental and public health professions concerned about the dental health of America? In short, is there really a dental health problem? If so, what is it like? What effect will fluoridation have on the problem? The answer to each of these questions has a bearing on the clear understanding of the need for and the effectiveness of water fluoridation. I shall limit myself to comments on the dental aspects of the measure. Other speakers will discuss its safety, practicality, legality and lastly, its political overtones.

The importance of dental health in maintaining physical and emotional well-being is recognized by most thoughtful people. Dental disease begins soon after teeth first appear in the child's mouth and continues to be a major problem throughout life.

Dental defects lead the list of uncorrected conditions in the school age child. Considerably less than half of the total needs for dental care in our children are being met. Ninety-five per cent of the 16-year olds have decayed teeth. The average American can expect to lose half his teeth by the time he is 40. These conditions have become so universal that many people believe that they eventually must have dentures, and so take no steps to halt the progress of dental disease.

Actually, quite the reverse is true, although prompt action and continuous safeguarding are necessary to protect the teeth. The three major diseases or conditions affecting dental health, dental decay, periodontal disease (or pyorrhea), and malocclusion, each have the unique characteristics of being cumulative, or progressive, and permanent. Also, each of these conditions, occurring independently, predisposes the individual to one or more of the other oral diseases, so that each complements and adds to the prevalence of the other. Therefore, from birth on, these and other less complex oral conditions pile need upon need, adding to the total volume of dental ill health until we finally reach a level of oral disease which, in its quantitative terms, becomes a serious public health problem.

Paradoxically, the correction of every one of these conditions requires the individual attention of professional personnel. Unlike medical conditions (the common cold, for instance) dental conditions do not resolve spontaneously. I am sure you recognize how this unique characteristic tends to increase the gap between the occurrence of these dental conditions and their correction. Further complicating the situation is another problem of very sizeable proportion. Considered individually, many dental conditions are not deemed

serious enough by most people to require immediate attention. This indifference or procrastination, or lack of understanding, or whatever you wish to call it, compounds the problem. Thus, beginning in early childhood and increasing steadily throughout life, our population develops an alarming accumulation of neglect which eventually becomes so large that it is difficult to comprehend. The progressive accumulation of dental disease, with its painful, costly and disfiguring end results has become a drain on the national health and on the individual family pocketbook. The accumulated dental ills present a problem with which professional manpower at its present level cannot adequately cope, even though the national dental bill runs to more than $1.5 billion a year. This fact is true in spite of the fact that the United States has the best-trained dentists, and more of them, than any other country in the world.

With practically the entire population needing more dental attention than it now gets, it is quite evident that only a fraction of the dental ills of the nation can be treated adequately. Unless effective and safe preventive measures are applied, the reservoir of untreated dental conditions will grow larger each year. Prevention is the only reasonable solution to the problem.

Thus far, only one practical and economical preventive method, useable on a broad scale, has shown positive, clear-cut results. This method is the only one which has been demonstrated to be both effective and perfectly safe. I am speaking, of course, of the fluoridation of community water supplies.

Fluoridation of water is a health measure that has proved effective in preventing 60 to 70 per cent of new tooth decay. Water fluoridation is merely the adjustment of the fluoride content of a water supply to a level which will reduce the amount of new tooth decay. The amount of fluoride necessary to accomplish this remarkable feat is very small in most areas of the country—about one part of fluoride for each million parts of water.

Actually, the occurrence of fluorides in water is not something new, especially in the United States. For years more than 65 million people have used water containing some natural fluoride. Four and a half million of these people drink naturally fluoridated water containing close to the recommended amount of fluoride, or more. Although one part fluoride to each million parts of water (ppm) is the recommended concentration, for years many thousands of people have used water containing three times, five times and even seven or more times this amount. Some communities in South Dakota, Nevada, and Texas use water containing 8 ppm.

Let me give you a brief history of the development of fluoride research so that you may have the basic facts. Studies on fluorides and dental health date back to the last century when it was first suggested that the lack of fluoride in the diet probably was responsible for the high rate of dental decay. Research in the United States dates back to 1908, when western dentists became interested in learning the cause of Colorado brown stain.

In 1916, two scientists reported "a curious absence of decay" among residents in areas where we now know fluorides were present. However, not until 1931 was fluoride proved to be the element present in the drinking water which was influencing dental health. By 1940 it was proved that there are

three types of drinking water—as far as its effect on dental health is concerned—those deficient in fluorides, waters with the optimum concentration and those with excessive amounts of fluoride.

Dental decay is extensive in communities using low-fluoride water, while people using water with the correct amount of fluoride have about two-thirds less tooth decay. The use of water with excessive fluorides results in discoloring or mottling of the teeth--the Colorado brown stain to which I referred earlier.

Other studies proved that the beneficial effects of optimum fluoride water, accrued during childhood, continue into the older age groups. Comparing the tooth decay rates of adults in two cities, one fluoride-free, one with fluoride, it was noted that the decay pattern established in childhood continued into the older age groups. For instance, in Boulder, Colorado, which does not have fluoride in its water, 40 to 44-year old persons had an average of 22 teeth which had decayed, while the same age group in nearby Colorado Springs, whose water supply has 2.5 parts per million of fluoride, averages less than half (10) as many teeth attacked by dental decay. It was found also that the 40 to 44-year old group in the non-fluoride city averaged five times as many missing teeth as their counterparts who had used fluoride water all their lives.

All in all, the evidence from the studies of the effect of naturally occurring fluorides on tooth decay was very impressive. Consequently, in 1945-6 several studies, each one independent of the others, were begun to determine the problems involved in deliberately adjusting the fluoride concentration of a community water supply which was deficient in fluoride. Some of these study cities were Grand Rapids, Michigan; Newburgh, New York; Brantford, Ontario; Evanston, Illinois; Marshall, Texas; Sheboygan, Wisconsin; and Lewiston, Idaho.

In Grand Rapids the study was a cooperative project involving the Public Health Service, the State of Michigan, the University of Michigan, and the City of Grand Rapids. The study, now in its twelfth year, shows that children born in Grand Rapids since 1945 and raised on fluoride water have received the greatest benefits—about 65 per cent less tooth decay than children of the same age born prior to fluoridation. The children who were born before the water was fluoridated obtained less, though significant, reductions in tooth decay.

For example, children who were seven years old when water fluoridation was instituted and who have used the fluoride-bearing water until they were 16 have nearly 30 per cent less decay than 16 year olds who never used fluoride water.

This same pattern of reduction in dental decay was observed in all the other independent studies. Data from these study cities indicate that continuous users of water to which the optimum amount of fluoride has been added have the same pattern of lowered tooth decay rates found in persons using natural fluoride water under similar conditions. No special problems were found to exist in the adjustment and maintenance of an optimum fluoride concentration.

On the basis of these studies, and the wealth of information collected in natural fluoride areas, (in all, over 9,000 pieces of literature have been published on the subject) recognized leaders and authorities in dental health in 1951 unanimously endorsed community water fluoridation as effective in reducing tooth decay about 65 per cent. The list of responsible health agencies approving fluoridation includes every major group concerned with dental health. These organizations could do no less and meet their obligations as responsible health agencies.

The adoption of water fluoridation by American communities has been rather typical--not too slow, yet not as fast as reason would suggest. Since 1945, when fluoridation first was introduced on an experimental basis, over 1,500 cities have instituted the procedure. A total of over 32,000,000 people now are using water in which the fluoride content has been adjusted. Most of the major cities in the United States are fluoridating, including Chicago, Philadelphia, St. Louis, Baltimore, Washington, San Francisco, and of course, your own Indianapolis. By far the largest number of communities not yet fluoridating are those of small size, where technical assistance and public health competence is not so directly and readily available. A total of 78,000,000 people reside in unfluoridated communities, so you can see the magnitude of the job remaining.

As is true in all matters of health, there are occasional dissenting opinions regarding fluoridation from a few individual physicians and dentists, who honestly disagree with the overwhelming weight of fact and the judgments of their colleagues. The few professional persons opposed to fluoridation have not found many of their co-workers in agreement with them on this subject. There are almost a quarter of a million physicians in our country and about 100,000 dentists. Each one has his civil and professional rights. Each can express an opinion and often does. It is not unusual to find among that number of people some who do not go along on a health measure, no matter how much work has been done on it or who has endorsed it. It is not surprising that water fluoridation has its individual opponents among professional people... I should point out that if we required unanimity on every health measure, we should be forced to discontinue almost all known and accepted health procedures.

Science has become so complex that the individual medical and dental practitioner usually has to rely on the competence and integrity of his research colleagues in evaluating a new health measure. Medical progress comes about through the dedicated and skilled work of many people. Water fluoridation is a perfect example of professional collaboration and cooperation. Thousands of specialists from dozens of different fields have played some part in the development of this public health measure. Their recommendation to the people of the country is this: water fluoridation is a safe, inexpensive, and practical way to reduce substantially the incidence of one of the most widespread, painful and costly afflictions of mankind.

To the layman, however, it must appear that two conflicting views are held. Whom should you believe? Luther Gulick, expert on municipal government and consultant to the Mayor of the City of New York, speaking about the hearings on fluoridation in New York City, recently offered this advice: "...The authorities to trust on these scientific questions are those public health and

medical authorities who are themselves recognized by their own professions. Laymen must turn on professional matters to the men who stand highest in their own professions. They know how to evaluate the scientific evidence. They know what research is required and how much. They know what research is honest, what is not. Each in his field keeps up with all that is known. We must rest on the statements of the experts whom the professions recognize as such, not on those who talk loud or sound good... In a scientific matter we don't count noses; we count professional standing."

Strangely enough, most of the "scientists" who come before administrative or legislative bodies in opposition to fluoridation have little or no standing in their own professions. Most of them argue outside their own field of competence and appear to be opposed to public health programs generally. Some of them are men of no standing in their home towns, or among their own professional associates; some talk about this or that one little experiment and ignore the vast mass of accredited evidence. It is a topsy turvy world when an electrical engineer, for instance, with no standing among professional statisticians, lectures to a legislative body on statistics and health. Yet this incident happened before the Congress of the United States.

If, from ideas gained at this conference, you decide that you wish to discuss the pros and cons of fluoridation with your community, you should be armed with some facts about the opponents of fluoridation who operate on the national scene. Since we cannot go into the background of all of the opponents, I should like to offer some general comments on them as a group.

1. They lack an understanding of basic scientific facts.

2. They select vague and unverified reports to support their claims.

3. They distort parts of valid data to fit their own purposes.

4. They make attacks on the reputation of official health agencies and reputable scientists.

5. They produce no new knowledge.

6. They ask the question: "Who knows what the long-term effects are?" and thereby create doubt and delay.

They have attempted to build a smokescreen with their scientific doubletalk about the research upon which fluoridation is based. It should be clearly understood that my comments are directed toward those who oppose fluoridation nationally, on a full time basis. Many people in local communities who are aroused by national agitators, are sincere and well-meaning individuals, to whom the above comments do not apply.

No doubt when you get back to your home communities and look more closely into the problem of obtaining fluoridation for your neighborhood, you will be told that the American Medical Association is re-studying fluoridation and it may be well to wait until their report is available. An editorial in the American Dental Association's Journal sums up the feelings of dentists and

public health workers on the subject by saying: "Since the first communal fluoridation project was started more than 10 years ago, evidence has mounted proving the...effectiveness of the process. More recently, a number of carefully controlled studies have demonstrated that fluoridation, as recommended by scientific authorities, is not harmful systemically. There have also been some claims and assertions by a few physicians that controlled water fluoridation is somehow or other harmful. An evaluation of these reports and claims by official agencies of the American Medical Association will be a welcome addition to the voluminous literature on fluoridation." The report will be made to the House of Delegates of the American Medical Association in December. We look forward to the report.

Since the Public Health Service (the agency for which I speak) is the special target of the opponents of fluoridation, I should like to add a word about how the Service came to endorse fluoridation as a public health measure. Statements by opponents that the endorsement of fluoridation was made hastily are totally untrue. Dentists who believed that experience in naturally fluoridated areas fully justified adoption of community fluoride programs waited many long years before the U. S. Public Health Service and the American Dental Association were willing to recommend the procedure. During the period 1945 to 1950 the Public Health Service and the American Dental Association repeatedly were criticized for their "conservative" attitudes. They absolutely refused to back fluoridation until the results of controlled studies proved beyond reasonable doubt that the measure was effective and safe. After they did endorse fluoridation, in 1951, the Service and the American Dental Association then were criticized by other groups for being "hasty and premature."

This "damned if you do and damned if you don't" situation is one with which the Public Health Service has learned to live since its inception in the early days of the Republic. It has never let itself be swayed by hysteria, nor by an organized opposition to health measures and it will not deviate from its course in the matter of fluoridation. The Public Health Service is a member of the family of government agencies dedicated to the humane task of helping the American people help themselves toward a healthier, increasingly more enlightened and more secure world for themselves, and, in this measure, for mankind. Indeed, the Public Health Service is proud of the responsibilities which the American people, through the United States Congress, have entrusted to it. To discharge its trust, the Service has adopted a philosophy and a policy of partnership with all those who would advance the health of mankind.

However, as with all public health procedures, the decision on fluoridation rests and, in our opinion, always should rest with the local community. In public health work, it could not be otherwise, nor would anyone wish it to be otherwise. All local health programs, from the operation of clinics to the fluoridation of the water supply, are the responsibilities of the community. We believe that there is no justification for outside intervention into local health matters. We feel certain that in fluoridation as in other health matters, the combination of professional health leadership and enlightened citizen interest will insure the decision that will enable communities to go forward in health.

In summary, the dental profession and public health workers have for your consideration a positive health measure, one which will benefit the future generations of your community. The anti-fluoridationists, have nothing to offer your community but a continuance of poor dental health, of pain and infection.

There is no longer any real argument about the effectiveness of fluoridation nor about its safety, economy, legality, or place in the American way of life, as you will hear from other speakers later in the day. The real issue is a moral-political one. As community leaders you must answer these questions: Can you reasonably be a party to withholding the benefits of fluoridation because political fortitude may be required for its initiation? Can you afford to deprive the future citizens in your town of improved dental health because a vocal minority threatens you with dire but undefined consequences? You who are in positions of authority have a serious obligation to acquaint yourself with the pertinent facts about water fluoridation, secure adequate counsel, and make a decision based on reason and judgment, not emotion or fear. If you do these things, I am certain you will institute water fluoridation in your community as a positive and constructive step toward better dental health.

EDITORIALS

STATE BOARDS OF HEALTH —— DENTIST MEMBERS

Twenty-one years ago just at the time the A. A. P. H. D. was in the process of organizing there was afoot a plan to form an association comprised of the dentist members of State Boards of Health. The plan died aborning, its demise probably being somewhat influenced by the arrival of the infant A. A. P. H. D. That, despite possible differences in the objectives of the two organizations, there would have been frequent instances of duplicated activities is obvious. And, perchance, the realization that there seemed (and still seems) to be too many organizations determined a decision that the plan be halted.

The A. A. P. H. D. has not overlooked - completely, at least - recognition of the dentists who, as representatives of the profession of dentistry, serve on the policy making bodies of state health agencies. They are admitted to "Associate" membership in our group. Occasionally one or another of them has been on the programs of A. A. P. H. D. annual meetings. Frankly, however, we question whether we have not been remiss in (1) not attracting more of them to association with us, (2) not more often including them on our programs and (most important) (3) not on occasion planning a program deliberately set up to attract their attendance as audience to our deliberations.

As to the first of these - their membership - let us report that a review of our membership list discloses (so far as definite identification is concerned) only five (5) State Board of Health dentist representatives. There should be more.

Concerning their utilization on our programs there are innumerable facets of dental health administration to which they could contribute greatly. That they - or some of them - would welcome such opportunity is to be believed. Moreover, it may be assumed that more often than not they are of that group of our profession that <u>attend</u> the annual A. D. A. meeting and consequently (despite our inability to pay honoraria or expenses) would be available to us on invitation.

But it is the foregoing third suggestion that we would emphasize. Do they know <u>our</u> problems? Or, if they know them within their own states, do they know how those problems are approached elsewhere? Are they aware of the informative, the thought provoking, the erudite presentations of our programs and the discussion subsequently ensuing? Even tho' some of them <u>may</u> know they would know them <u>better</u> were we to plan our programs with a direct appeal to their, the Board members, attendance. We urge that our Program Committee consider this suggestion. And we suggest further that in each state effort be made to get the State Board of Health dentist member to our annual meetings.

NEW DATES

With this issue of the Bulletin the quarterly publishing is changed from February, May, August and November to March, June, September and December. This change was suggested by the Editor following the unusually long delay in the issuance of the November '57 Bulletin and by mail vote the Executive Council approved the suggestion.

While there are a number of reasons for the change, the main one is that of the timing of A. A. P. H. D. annual meetings. These more often than not are held in October or November and if papers presented and the minutes of business meetings are to appear in print in the earliest possible Bulletin the change from November to December is most certainly indicated. Similarly, the change from February to March makes possible the early publication of data on the semi-annual meeting (always held early in February).

Probably the change will not completely eliminate delayed issuance of the Bulletin. Blame attaches to no one for the delays. The Bulletin's publication is based on availability of borrowed labor - largely unremunerated labor. Any time someone opines he could get the Bulletin out more promptly we feel certain the present Publisher will relinquish his post with alacrity. And when <u>that</u> happens, the Editor isn't going to resign. He will <u>quit</u>.

RE EDITORIALS

Editorials serve two functions. They fill up space, and they express opinions on vital subjects of general interest. At least they are supposed to serve this latter function. This one, frankly, is written with only space filling in mind. Let us explain.

The fulfillment of both functions rests with the Editorial staff. The European trip of Associate Editor Harry Bruce has prevented his initialed by-line in this issue. As for Associate Editor David Striffler, we quote from his brief note accompanying his contributions to Notes and News, "Editorial may follow. At present I'm all 'thunk' out." Obviously, Dave is cognizant of the real purpose of editorials. Like him we are thunk out. But space <u>must</u> be filled.

AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS
MINUTES OF THE MEETING
HELD IN MEETING ROOM 19, CONRAD HILTON HOTEL, CHICAGO, ILLINOIS
SUNDAY, FEBRUARY 2, 1958

Active, Associate and Honorary Members in Attendance:

Ayers, Bull, Downs, Dwire, Franchi, C. L. Friend, Gerrie, Gish, Gruebbel, Hoag, Jamison, Krupicka, Leonard, Lewis, Mehaffey, Pelton, Peterson, Smiley, Smith, Stockton, Tossy, Triani, Wauro, Wertheimer, and Zur.

Visitors:

Cyril L. Friend, Jr., and Charles L. Pomernacki.

1. The meeting was called to order at 9:55 A. M. by President Roy D. Smiley.

2. Reading and Adoption of Minutes

It was moved and supported that the reading of the Minutes of the Miami meeting be dispensed with and that the Minutes be adopted as published. Carried.

3. Reports of Officers

President - Oral Report - Dr. Smiley

Secretary-Treasurer - Written Report - P. Ayers
Accepted as read.

Editor - Oral Report - Dr. Leonard

Doctor Leonard discussed the difficulties which he and the Publisher had been having in issuing the Bulletin during the months of November and February. He explained that publication of these two issues were usually delayed in order that material from the mid-winter and the annual meetings could be contained in them. Doctor Leonard reported that the Executive Council, by mail vote, had approved changing the publication dates of the Bulletin to March, June, September and December beginning with the March 1958 issue.

Publisher - Oral Report - Dr. Wertheimer

4. Reports of Standing Committees

Necrology
P. Ayers reported on the death on December 28, 1957, of Dr. Edward W. Neenan who had been Director of Dental Services at the Veterans Administration West Side Hospital in Chicago.

Membership - No Report

4. Reports of Standing Committees (continued)

Health and Visual Education - Letter - Dr. Alice Kinninger

Following comments and suggestions made by Doctors Bull, Krupicka, Stockton, and Peterson, the Secretary was instructed to ask the members of the Health and Visual Education Committee to consider initiating the following activity:

Collection and evaluation of new dental health education material with subsequent reporting of the Committee's findings in the AAPHD Bulletin, the reports to include not only a description and an evaluation of each item, but also the address from which sample copies could be obtained by interested members.

Records and Forms - No Report

Legislation and Social Trends - No Report

Scientific Program - No Report

Nominating - No Report

Local Arrangements
Chicago - Oral - Dr. Lewis
Dallas - Letter from Dr. Mergele
Read by P. Ayers

Liaison with Chronic Disease - No Report

Federal Grant-in-Aid - No Report

Resolutions - No Report

Awards - Oral

Dr. Smiley reported that the Committee had met and had prepared a Report but did not want to make the contents of the report known until the proper time during the annual meeting in Dallas.

Dr. Bull moved that approval be given to the system of secrecy recommended by the Committee on Awards. Following a second by Dr. Stockton, the Motion carried.

Dr. Smiley suggested that the Committee on Awards be allowed to spend up to $100.00 if necessary, in preparation of Distinguished Service Awards for the Dallas meeting. He further suggested that after 1958 no more than one Distinguished Service Award be granted in any one year.

Unfinished Business: None

New Business:

Dr. Gerrie reported that Congressman Burdick of North Dakota has introduced a Bill in Congress which would prohibit fluoridation of any water supply controlled by the Federal Government. This Bill resembles the Weir Bill but is limited to Federal water supplies.

Dr. Gerrie further reported that Dr. Wesley Young, Chairman of the Federal Grant-in-Aid Committee, has prepared and sent to the American Dental Association a questionnaire concerning a Dental Grant-in-Aid. The questionnaire is to be completed by State Dental Directors with the help of their State Councils on Dental Health. Discussion of the questionnaire is expected at the April meeting of State Councils on Dental Health.

Dr. Smiley reported on efforts being made by anti-fluoridationists to stop fluoridation in Tell City, Indiana, where citizens have had the benefit of fluoridation for the past five years.

Dr. Wertheimer reported that a suit for alleged damages due to fluoridation has been brought by a female resident of Highland Park, Michigan.

The Secretary read a letter from Dr. William R. Davis in which he expressed his appreciation for the Distinguished Service Award which was bestowed upon him at the Miami meeting.

The Secretary reported on the program which has been planned by Dr. Harry Bruce for the meeting of the Dental Health Section of the APHA, Southern Branch, to be held in Little Rock, Arkansas, May 7, 8, and 9.

Dr. Allen Gruebbel discussed the methods by which dental students are trained in public health and expressed the belief that serious consideration should be given to improvement in the content of such courses and in the manner in which they are taught. He suggested that perhaps the ADA Council on Dental Education should have a new look at the way we are teaching public health in terms of the present needs of dentists.

Doctor Smiley assigned to Doctor Zur the task of preparing a Resolution concerning the teaching of public health in dental schools, the Resolution to be ready for consideration at the Dallas meeting.

Doctor Pelton stated that he believed the most effective contribution the AAPHD could make would be to develop the course content and method of teaching a course in dental public health for dental students. He suggested that the Resolution to be prepared by Doctor Zur should include definite recommendations concerning what to teach students regarding dental public health and how to teach such courses.

Adjournment: 11:30 A. M.

SCIENTIFIC PROGRAM: 2:00 P. M. to 5:00 P. M.

Early Diagnosis of Oral Lesions

Dr. Patrick Toto, Associate Professor, Oral Diagnosis and Director of Clinics, Loyola University School of Dentistry.

The Significance of Exposures from Radiation Sources

Mr. Robert French, Bureau of Radiological Health, Illinois Department of Public Health.

Film: Science Fights Tooth Decay.

A New Approach to the Topical Application of Fluorides in Children - Progress to Three Years

Dr. C. W. Gish, Assistant Director, Division of Dental Health, Indiana State Board of Health.

Additional members and guests present for the afternoon AAPHD Scientific Session, February 2, 1958:

M. C. Arra, V. L. Diefenbach, Nancy Dorean, Joan Ferber, Bruce D. Forsyth, Treva Gish, Robert L. Hass, Earl Kennemer, L. S. Kleinschmidt, Betty Krippene, Joseph C. Muhler, Walter J. Schwager, Oswald Spence, P. D. Toto, Claude Young, and C. V. Zajdzinski.

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Secretary's Report

Active members	143
Associate members	21
Honorary members	2
Total	166

The above summary includes 4 new active members (2 re-instated).

4 additional applications for membership are in the process of being approved by the Membership Committee.

Polly Ayers, Secretary

1-29-58

Treasurer's Report

Money deposited for dues (for 107 members)	$535.00
Money deposited for subscriptions	52.50
Total money deposited	$587.50

Balance at beginning of 1957-8 terms	$605.23
Money deposited for dues & subscriptions	587.50
Total receipts	1,192.73
Total disbursements	438.25
Balance	$ 754.48

Polly Ayers, Treasurer

1-29-58

N O T E S and N E W S

F L A S H

DR. EDWARD TAYLOR DIES

The following memo has been received from Polly Ayers:

March 28, 1958

To: AAPHD Members

From: Polly Ayers, Secretary
Box 2591
Birmingham, Alabama

I have just received word that our good friend Doctor Ed Taylor died quickly and without pain at Lake Charles, Louisiana, on March 15, on his sixty-seventh birthday. His son writes that in going through his father's mail he was very touched with the many letters he found from AAPHD members. He said that the members of the Taylor family were most appreciative of the kindnesses you had shown Doctor Taylor and he asked that I tell you that even though his father could not answer the letters he was very grateful for word from his friends. Doctor Taylor's son's name and address is:

Colonel Edward H. Taylor, USAF
432nd Tactical Reconnaisance Wing
Shaw Air Force Base, South Carolina

(Signed) Polly

(We are indebted to Dr. B. F. Gunter, Acting Dental Director in Tennessee, for the following Notes and News items)

DENTAL PUBLIC HEALTH HIGHLIGHTS

Fluoridation

The World Health Organization, at a meeting in September, approved fluoridation. The basis for approval was from a study of hundreds of fluoridation programs in seventeen countries.

The American Medical Association House of Delegates, during the Association's Eleventh Annual Clinical Session at Philadelphia on December 5, reaffirmed its position that fluoridation of public water supplies is a safe method of reducing the incidence of dental decay. This action was taken on the basis of an exhaustive new study of the Association.

Dental Extern

Dr. Pat Basinger served a dental externship with the Division of Dental Health from the first of October until the meeting of the State Board of Dental Examiners in December. Dr. Basinger was headquartered in Chattanooga with Dr. Carl B. Holmes.

Personnel Changes

Mrs. Martha P. Smith, dental hygienist in the Chattanooga area, resigned her position in November to go into private practice.

Miss Peggy Patton accepted a position as dental hygienist with the Division of Dental Health the first of October. Miss Patton is working with Dr. Trithart in the West Tennessee area.

Dr. Trithart Honored

Dr. A. H. Trithart, principal dental officer for the West Tennessee area, has just completed his term of office as president of the Tennessee Public Health Association. He presided at the session held in Nashville on December 4, 5, and 6.

Dr. Trithart was invited to become a Fellow in the American College of Dentists at the Miami meeting, at which time he received this honor.

Dr. Trithart has successfully passed the American Board of Dental Public Health and is now a diplomate of that board.

AUTHORITIES TO STUDY IMPACT OF URBAN SPRAWL ON HEALTH OF MILLIONS

Community planners and health leaders from all parts of the country will meet in Philadelphia March 18-20 to discuss ways of coping with urban sprawl and its impact on the physical and mental health of the 96 million people - three out of five Americans - who live in cities or suburbs.

Setting for the discussions will be the 1958 National Health Forum at the Sheraton Hotel, sponsored by the National Health Council, in behalf of 63 member national organizations concerned with health improvements.

Principal speakers will be Governor Robert B. Meyner of New Jersey, who will address a dinner session on March 18, and Dr. Luther Gulick, president of the Institute of Public Administration, and former City Administrator of New York, who will speak at a luncheon on March 19.

The program was planned by a committee of 27 leading authorities under the co-chairmanship of Dr. Abel Wolman, professor of sanitary engineering at Johns Hopkins University, Baltimore, and consultant to the Atomic Energy Commission, the Public Health Service and other governmental agencies, and Frank C. Moore, president of the Government Affairs Foundation, New York, and former Lieutenant governor of New York.

Plans for the Forum, one of an annual series of conferences dealing with broad health problems facing American communities, were announced by the National Health Council's president, Basil O'Connor of New York City, president of the National Foundation for Infantile Paralysis.

The sessions will bring together community and regional planners, health officers and other public officials, housing specialists, social scientists, sanitary engineers, welfare administrators, board members of health and social agencies, hospital officials, representatives of many health professions, and management and labor representatives.

The Forum will focus on trends in population change and movement and the impact on governmental structures, community organizations and family life. The goal will be to find ways in which community planners and health leaders can work together effectively in protecting and promoting the health of people in areas affected by urban sprawl.

Representatives of selected large and small cities in various regions of the country will present, for discussion, case histories of urban sprawl and action taken by federal, state and local agencies to cope with resultant problems.

Specific areas to be discussed include community planning of hospitals and hospital-related services; cooperation between official and voluntary agencies in community research, planning and action; effects of urban sprawl on local health department programs; special problems of private professional practice in cities and suburbs; new problems of community organization of voluntary health associations; mental and social health in central cities and suburbs; problems of environmental and industrial health in changing communities, and the role of federal and state governments in adapting governmental structures to metropolitan health problems.

"The face of America is changing before our eyes," Mr. O'Connor said in announcing the plans. "Yesterday's cornfields are today's communities. As cities sprawl into the suburbs, both urban and rural areas are faced with problems which will result in chaos unless intelligent planning is applied. Not least among these problems are those related to physical and mental health, but health services can be planned intelligently only as part of total community and regional planning.

"We are confident that these sessions will help spur planning and action which will result in a more healthful environment for future generations of American people, just as past Forums have had an impact on planning and action in the important areas of health personnel, chronic illness and mental health," Mr. O'Connor said.

Other sessions planned in conjunction with the Forum are the tenth annual meeting of the National Advisory Committee on Local Health Departments and the annual meeting of delegates to the National Health Council.

(Editor's Note: Attention is called to the fact that among the distinguished participants in this meeting of the National Health Forum is Dr. Luther Gulick, writer of that marvelous "letter" entitled "Who Are We To Believe" published in the August 1957 Bulletin. Those who have not read the "letter" are urged to do so. Indeed, it is suggested that everyone re-read it).

NEWS NOTES AND ITEMS CONTRIBUTED BY ASSOCIATE EDITOR DAVID F. STRIFFLER:

The nine dental directors of the eleven Western states plan to get together on or about June 23 in or near Salt Lake City for a biennial meeting (in the off year from state and territorial dental directors). Chet Dalgleish will be in charge of hosting and hospitality, and Lloyd Richards is in charge of the program.

George Nevitt, regional dental consultant for the past few years out of San Francisco, is going to Egypt for a year long assignment sometime in June.

(Dick, I understand that Chuck Presnell is no longer dental director in Missouri as of some time in January).*

The position of dental director in Montana is vacant since Allen Willis left to take a position in a local department in California.

The New Mexico Department of Public Health in co-sponsorship with the University of New Mexico, the New Mexico Dental Association, and the W. K. Kellogg Foundation, held the third in its series of centralized postgraduate dentistry seminars at the University of New Mexico in Albuquerque in February. The guest clinicians were Max Sadove, M. D., Professor of Anesthesiology from the University of Illinois College of Medicine, and Gordon Fitzgerald, D.D.S., Professor of Roentgenology from the University of California School of Dentistry in San Francisco. The seventy New Mexico dentists who attended claimed that this was the best seminar yet and both clinicians are recommended highly to any other states.

The New Mexico Department of Public Health has been field training an undergraduate student in public health dental hygiene from the University of

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*Editor's Note: Correct! Chuck has retired and is now engaged in orthodontic practice in Jefferson City, Missouri.

Washington in Seattle for the three months of January, February, and March -- by name, Miss Jana Langslet. Would that the budget would enable us to employ Miss Langslet when she finishes her BS in public health dental hygiene in June. She is recommended to any public health dentist seeking a dental hygienist for his staff.

There has been quite a bit of interest lately in getting the water supplies of certain Indian pueblos and reservations -- where there are water supplies -- brought up to the optimum fluoride concentration. The Division of Indian Health of the Public Health Service is to be commended.

The Idaho Dental Association and the Division of Dental Health of the Idaho State Board of Health are continuing to put out an excellent newsletter. If you aren't on their mailing list, write to Wes and ask him to put you on. It's worth a three cent stamp just to get the jokes every month.

There should be a big crop of public health dentists being turned out of the schools of public health this year with a master's degree: Michigan has fifteen; Pittsburgh, two or three; North Carolina a couple; Yale and Harvard a couple. Also, there are about three dental hygienists picking up master's degrees this year.

A Christmas note was received from Carl Sebelius, now Chief Dental Officer of the WHO. It was written in an airplane some place over the Pacific en route to Hawaii from the romantic South Sea Islands and was mailed in San Francisco. Apparently Carl had left Geneva for the Near East, Far East, Hawaii, United States, and back to Geneva -- a trip around the World.

Grace Scholz, statistician from the Division of Dental Public Health, Public Health Service in Washington, is an amateur moon watcher. When she was in Santa Fe recently assisting in designing a periodontal disease research project, she sighted Sputnik II several times.

Betty Warner was also in Santa Fe on her way between Denver and Kansas City. Betty recently authored a chapter on dental hygienists in a text on oral hygiene.

SKI-ING SEBELIUS SUFFERS SPRAIN

Through Harry Bruce two interesting news items about Carl Sebelius are at hand. The first is the report of Carl having suffered a severe sprain of his ankle and knee in a ski-ing accident during the Christmas holidays. Bed-fast for several weeks, Carl is now recovering nicely.

The second report brings the word that Carl will terminate his WHO assignment following his attendance at the Brussels meeting of Federation Dentaire Internationale in August and expects to return to the United States on or about September 15, 1958. Welcome home, Carl.

CORRESPONDENCE

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
Washington 25, D. C.

January 30, 1958

Dr. Richard C. Leonard
Maryland State Health Department
2411 North Charles Street
Baltimore 18, Maryland

Dear Dick:

Frank Cady called me today to advise that a slight error was contained in the presentation of his award. To make a short story shorter, would you include a correction in the next Bulletin somewhat as follows:

> "Correction: One time President Tom Hagan advises that in the presentation of Frank Cady's award he inadvertently omitted the fact that while Frank received a Certificate in Public Health, and he received shortly thereafter, a Master of Public Health degree from Harvard. This followed a change in that institution's practice of limiting the Master of Public Health to Doctors of Medicine."

Frank also told me that he is patiently waiting at the window watching for you (and the award) to roll up the street. Snow or some other deterrent accounts for this situation, he fully understands.

Sincerely yours,

(Signed) Tom
Thomas L. Hagan
Dental Director

(Editor's Note: We finally got there)

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Dr. Frank C. Cady

5717 Kingswood Court Bethesda 14, Md.

Feb. 5, 1958

Dear Dick:

Thank you for driving all the way from Baltimore yesterday to present me with the A.A.P.H.D. distinguished service award which the Association so generously voted me at the Miami meeting. Your presentation speech touched my heart??

This honor is affectionately and proudly cherished.

I am also pleased the Association saw fit to honor in the same manner, two of my good friends. Bill Davis and Ernest Branch richly deserve this award for their many contributions to the advancement of dental health.

I would appreciate it if you will publish this letter in the next issue of the Bulletin so the membership will learn how much I appreciate their consideration.

Cordially yours,

Frank

P. S. Your editorial re my award in the last issue of the Bulletin was very flattering. I like to be flattered so many thanks. F.

(Editor's Note: Presentation speech, "Here it is.")

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AMERICAN DENTAL ASSOCIATION

222 East Superior Street, Chicago 11, Ill.

January 1958

Dear Editor:

A review copy of the 1958 edition of ACCEPTED DENTAL REMEDIES is being sent to you separately with the compliments of the American Dental Association.

ACCEPTED DENTAL REMEDIES 1958 represents a new look at the drugs used in the present day practice of dentistry and the problems which face the dentist. The material in this edition not only has been brought up to date but it has been reorganized in order to make the book easier for the busy practitioner to use. A greatly expanded table of contents provides an outline of the important sections of the entire book.

Since it has become increasingly clear that the dentist must be aware of the total health status of his patients, a new chapter has been added to ACCEPTED DENTAL REMEDIES. This chapter provides a brief outline of the significance to the dentist of some of the drugs which physicians frequently administer to ambulatory patients who may then come to the dentist's office for concurrent dental care. The chapter on emergencies has been expanded to emphasize the desirability of anticipating and preventing the development of emergency situations. Here again emphasis is placed upon the desirability of recognizing the health status of the patient. These revisions reflect the increasing recognition of the important contributions which dentistry makes to total health care.

As in earlier editions, ACCEPTED DENTAL REMEDIES 1958 includes information concerning drugs of recognized value in dentistry, drugs of uncertain status more recently proposed for use by the dentist, and some drugs once employed extensively but now generally regarded as obsolete. Only brands of drugs which the Council has classified in Group A are included in the book.

ACCEPTED DENTAL REMEDIES 1958 contains 228 pages, including the provisions for acceptance of products, a general index, a distributor's index, an index of current reports from the Council and an index of more recent reports on products not listed in ACCEPTED DENTAL REMEDIES, including those classified in Groups B, C and D. The book sells for $3.00 a copy and is now available from the Order Department of the American Dental Association.

It would be appreciated if you would furnish us with a tear sheet of any review of this book that may appear in your publication.

Sincerely yours,

J. Roy Doty, Secretary
COUNCIL ON DENTAL THERAPEUTICS

JRD:rw

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AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

January 21, 1958

TO: Dr. Leonard

FROM: Polly Ayers

SUBJECT: News for the AAPHD Bulletin

Dr. Rudolph Lanclos of the Virgin Islands has written that he is doing graduate work at Columbia University this year. His address while at school is

Bard Hall
New York City 32, New York

PA/ew (Signed) Polly Ayers

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Public Health Service Washington 25, D. C.

December 6, 1957

MEMORANDUM

TO: All State and Territorial Dental Directors

SUBJECT: AMA Endorsement of Fluoridation

On December 5, 1957, the following recommendation proposed by the Reference Committee on Hygiene, Public Health and Industrial Health, was passed by the House of Delegates of the American Medical Association.

"The Committee has carefully reviewed the special report on fluoridation of public water supplies prepared jointly by the Council on Drugs and the Council on Foods and Nutrition and transmitted as supplemental Report G, to the Board of Trustees. The two Councils are to be commended on their extensive study of the question and the excellent bibliography and tables which have been appended.

"After careful consideration of the report, printed material and testimony, your Reference Committee is of the opinion that fluoridation of water supplies is a safe and practical method of reducing dental caries during childhood; it agrees with the conclusion of the joint committee of the above-named Council and recommends the approval of the report."

The closing paragraph of the Committee's 27 page report, which was also adopted by the American Medical Association House of Delegates is as follows:

"Fluoridation of public water supplies should be regarded as a prophylactic measure for reducing tooth decay at the community level and is applicable where the water supply contains less than the equivalent of 1 ppm (parts per million) of fluorine."

(Signed) Norman F. Gerrie

Norman F. Gerrie, Dental Director
Chief, Division of Dental Public Health

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AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS

December 4, 1957

Dr. Richard C. Leonard, Editor
American Association of Public Health Dentists
2411 North Charles Street
Baltimore 18, Maryland

Dear Dr. Leonard:

Will you please publish the following announcement in your Journal in ample time before the date of the meeting?

The fifteenth Annual Meeting of the American Association of Industrial Dentists will be held during the Industrial Health Conference at Atlantic City, New Jersey, April 21, 22, 23, 1958. Headquarters will be at the Chalfonte-Haddon Hall. An interesting program has been arranged. All those interested are cordially invited.

Thank you for your cooperation.

Sincerely yours,
(Signed) Edw. R. Aston

Edward R. Aston, D.D.S.
Secretary-Treasurer

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DALLAS ARRANGEMENTS

Aided by the local (i.e., if Houston may be considered local to Dallas) effort of Dr. Marvin Mergele, the arrangements for the annual A.A.P.H.D. meeting in Dallas next November are taking shape. Still uncertain as to details, definite announcement as to "headquarters" will be delayed until the June Bulletin.

NICE REPORT

Entitled "Base-Line Survey Pays Off," published in the January 1958 issue of North West Dentistry and authored by Dr. William A. Jordan, this report on caries reduction during five years of fluoridation in Ely, Minnesota, gives splendid support to the validity of this dental health measure. Emphasis is placed upon the value of the base-line survey both for evaluation and, equally important, as a factor in education of the laity.

CAREERS IN DENTISTRY

Attractice as well as informative, the newly issued brochure titled as above and available from the A.D.A. Council on Dental Education will be of both interest and value to public health dentists. The authenticity of the statement that out of 90,000 dentists in the United States only 350 are engaged in "public health dentistry" is open to a question that depends on a determination of where private practice (as a health service to the public) ends and where "dental public health" begins. But that question and its varying answers does not nullify the validity of the opinions that there is a tremendous field open for young men and women seeking "careers" - and that they are needed.

FROM A.D.A. NEWS LETTER

An excellent article on water fluoridation, entitled "Our Billion Dollar Toothache," will be carried in the March issue of Parents' Magazine. The author of the article is Louis I. Dublin, president of the Committee to Protect Our Children's Teeth, Inc. The article is written in a popular style and is highly recommended for reading by all persons interested in improved dental health for children. Reprints of the article may be ordered from Parents' Magazine, 52 Vanderbilt Ave., New York 17, N. Y., at the cost of $16.25 for 500 and $20.65 per thousand.

NEW MOVIE TELLS
FLUORIDATION STORY A new film on fluoridation is now available for purchase or rental by dental societies, civic groups and interested individuals. The film, "Science Fights Tooth Decay," answers such questions about fluoridation as: Does it work? Is it safe? Should our town keep it? The film was produced with the cooperation and technical guidance of the New York State Department of Health, the U. S. Public Health Service and the University of Rochester School of Medicine and Dentistry. The film is in black and white and runs 13 and 1/2 minutes. It is cleared for use on television. The purchase price is $70 per print. The film may be purchased from Leo Trachtenberg, Films, 90 Riverside Dr., New York 24, N. Y.

Also available from the Trachtenberg firm is the film, "Science Writers Get the Facts on Fluoridation." This is a black and white film running 14 minutes. It also is cleared for use on television. The purchase price is $55. In this film, Dr. W. W. Bauer of the American Medical Association and Dr. F. A. Arnold of the National Institute of Dental Research are questioned about fluoridation by science writers.

Both these films are available for rental from the A.D.A. film library.